SounPacific
Environmental Services
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# QUARTERLY GROUNDWATER MONITORING REPORT

**Third Quarter 2005 (Thirteenth Quarterly)**

**Sampled on July 10, 2005**

**Job # SP-165**

**LOP # 1TDN059**

**Crescent Shell**
890 L Street
Crescent City, California 95531

September 10, 2005

This *Quarterly Groundwater Monitoring Report* was prepared by SounPacific Environmental Services (SounPacific) staff for Big Oil & Tire Co. (BO&T). This report documents the results of the 13th sampling event of the site's groundwater monitoring wells. This report includes data from previous studies that were conducted by Clearwater Group, Inc. (CGI) and file review conducted at Del Norte County Department of Environmental Health (DNCDEH). The station is located at 890 L Street, Crescent City, California (Figure 1).

## SITE DESCRIPTION

The site is located in downtown Crescent City, at the corner of Ninth and L Streets in Crescent City, California. L Street is used as the southbound lane of U.S. Highway 101. The lot remains vacant while the owner continues to investigate the lateral and vertical extent of contamination. Drainage is controlled by culverts that flow towards the ocean. Sewer and water services are supplied by public utilities (Figure 2).

## SITE TOPOGRAPHY AND LAND USE

SounPacific understands that BO&T currently owns the property. The site is a vacant lot. The site topography is relatively flat with the surrounding topography consisting of terrain that descends in an east to southeasterly direction (Figure 1). The surrounding vicinity includes a collection of commercial and residential properties. Skagg Auto Repair lies adjacent to the southwest property line. Various residential properties border the southeastern side of the site, and L Street and Ninth Street run along the northwest and northeast sides of the property, respectively. The former Crescent Shell site is located within one mile of the Pacific Ocean as shown on Figure 1. A review of county records indicated that there is an ongoing UST investigation directly to the northeast of the site, on the opposite side of L Street.

## RESULTS OF QUARTERLY SAMPLING

A groundwater-monitoring program was implemented at the site in May 2002 for wells MW-1 and MW-2, and expanded to MW-4, MW-5, MW-6, and MW-7 on April 22, 2003, following their installation. An additional monitoring well MW-8 was installed on March 4, 2005. The current monitoring program will continue until further notice. The program consists of recording quarterly water level data and collecting quarterly groundwater samples for laboratory analysis. Water level data is used to develop a figure which displays the groundwater gradient and average flow direction using standard three-point calculations. Analytical results from groundwater samples collected from the monitoring wells during quarterly sampling events present hydrocarbon contamination levels in the groundwater beneath the site. For this monitoring event, the monitoring wells were gauged and sampled on July 10, 2005.

## FIELD DATA

**Wells gauged:** MW-1, MW-2, MW-4, MW-5, MW-6, MW-7 and MW-8

**Groundwater:** Ranged from 26.96 to 28.73 feet above mean sea level (Table 1)

**Floating product:** Sheen detected in MW-4, MW-5, MW-6, and MW-8

**Flow Direction:** ESE (Figure 3)

**Groundwater gradient:** 0.01 feet per foot (ft/ft) (Figure 3)

On July 10, 2005, the depth to groundwater in the site's seven monitoring wells ranged from 8.05 feet below top of casing (btoc) in well MW-1 to 10.92 feet btoc in MW-8. When corrected to mean sea-level, water level elevations ranged from 26.96 feet above mean sea-level (amsl) in MW-8 to 28.73 feet amsl in MW-1. Groundwater levels for the July 10, 2005 monitoring event, along with historical levels and elevations are included in Table 1. Groundwater flow on July 10, 2005 was towards the east-southeast at a gradient of 0.01 feet per foot. This flow direction and gradient is similar to the previous monitoring event's flow direction and gradient. The groundwater flow and gradient are graphically depicted in Figure 3. Prior to sampling, all wells were purged. The groundwater field parameters for each well are presented below.

## MONITORING WELL MW-1 GROUNDWATER FIELD PARAMETERS

| Time | Total Vol. Removed/ gal | pH | Temp./ F | Cond./ ms(cm)$^{-1}$ |
|---|---|---|---|---|
| 3:56 pm | 0 | 6.89 | 62.40 | 0.537 |
| 3:59 | 1 | 7.00 | 62.40 | 0.551 |
| 4:01 | 2 | 7.03 | 63.33 | 0.542 |
| 4:03 | 3 | 7.07 | 63.12 | 0.603 |

## MONITORING WELL MW-2 GROUNDWATER FIELD PARAMETERS

| Time | Total Vol. Removed/ gal | pH | Temp./ F | Cond./ ms(cm)$^{-1}$ |
|---|---|---|---|---|
| 3:08 pm | 0 | 7.08 | 61.83 | 0.248 |
| 3:12 | 1 | 7.01 | 61.90 | 0.276 |
| 3:15 | 2 | 6.98 | 61.97 | 0.273 |
| 3:18 | 3 | 6.96 | 61.94 | 0.272 |

## MONITORING WELL MW-4 GROUNDWATER FIELD PARAMETERS

| Time | Total Vol. Removed/ gal | pH | Temp./ F | Cond./ ms(cm)$^{-1}$ |
|---|---|---|---|---|
| 2:16 pm | 0 | 7.58 | 61.78 | 0.164 |
| 2:20 | 1.65 | 7.46 | 62.10 | 0.174 |
| 2:23 | 3.23 | 7.38 | 62.23 | 0.175 |
| 2:27 | 4.95 | 7.32 | 62.29 | 0.178 |

## MONITORING WELL MW-5 GROUNDWATER FIELD PARAMETERS

| Time | Total Vol. Removed/ gal | pH | Temp./ F | Cond./ ms(cm)$^{-1}$ |
|---|---|---|---|---|
| 2:43 pm | 0 | 7.39 | 62.27 | 0.181 |
| 2:48 | 1.5 | 7.29 | 61.18 | 0.179 |
| 2:51 | 3 | 7.31 | 60.98 | 0.179 |
| 2:54 | 4.5 | 7.27 | 60.54 | 0.181 |

## MONITORING WELL MW-6 GROUNDWATER FIELD PARAMETERS

| Time | Total Vol. Removed/ gal | pH | Temp./ F | Cond./ ms(cm)$^{-1}$ |
|---|---|---|---|---|
| 3:32 pm | 0 | 7.12 | 58.91 | 0.126 |
| 3:35 | 1.3 | 7.18 | 58.29 | 0.132 |
| 3:37 | 2.6 | 7.14 | 58.28 | 0.134 |
| 3:40 | 3.9 | 7.11 | 58.15 | 0.144 |

## MONITORING WELL MW-7 GROUNDWATER FIELD PARAMETERS

| Time | Total Vol. Removed/ gal | pH | Temp./ F | Cond./ ms(cm)$^{-1}$ |
|---|---|---|---|---|
| 4:25 pm | 0 | 7.06 | 61.42 | 0.184 |
| 4:29 | 1.6 | 7.23 | 60.96 | 0.192 |
| 4:31 | 3.2 | 7.23 | 60.73 | 0.195 |
| 4:35 | 4.8 | 7.16 | 60.92 | 0.200 |

## MONITORING WELL MW-8 GROUNDWATER FIELD PARAMETERS

| Time | Total Vol. Removed/ gal | pH | Temp./ F | Cond./ ms(cm)$^{-1}$ |
|---|---|---|---|---|
| 1:44 pm | 0 | 7.05 | 61.89 | 0.643 |
| 1:50 | 1 | 7.02 | 61.07 | 0.531 |
| 1:53 | 2 | 7.03 | 60.95 | 0.525 |
| 1:56 | 3 | 7.01 | 60.97 | 0.530 |

## ANALYTICAL RESULTS

**Sampling locations:** MW-1, MW-2, MW-4, MW-5, MW-6, MW-7 and MW-8

**Analyses performed:** TPHg, BTXE, MTBE, DIPE, TAME, ETBE, TBA, TPHd, TPHmo

**Laboratories Used:** Basic Laboratory, Redding, California

The analytical results for the current monitoring event are presented below and graphically depicted in Figure 4. The laboratory report is included as Appendix A. The historical analytical results for all monitoring wells, since the implementation of groundwater monitoring, are included as Table 2.

| | **MW-1** | **MW-2** | **MW-4** | **MW-5** | **MW-6** | **MW-7** | **MW-8** |
|---|---|---|---|---|---|---|---|
| | **(ppb)** | **(ppb)** | **(ppb)** | **(ppb)** | **(ppb)** | **(ppb)** | **(ppb)** |
| **TPHg:** | **22,200** | **1,670** | ND < 50.0 | **16,600** | ND < 50.0 | **53.2** | **16,800** |
| **Benzene:** | **34.0** | **3.3** | ND < 0.5 | **68.0** | ND < 0.5 | ND < 0.5 | **1,540** |
| **Toluene:** | **2,220** | **63.2** | ND < 0.5 | **2,120** | ND < 0.5 | ND < 0.5 | **47.5** |
| **Xylenes:** | **4,560** | **159** | ND < 1.0 | **3,970** | ND < 1.0 | ND < 1.0 | **2,420** |
| **Ethylbenzene:** | **2,180** | **29.3** | ND < 0.5 | **655** | ND < 0.5 | ND < 0.5 | **1,990** |
| **MTBE:** | ND < 50.0 | ND < 1.0 | ND < 1.0 | ND < 50.0 | ND < 1.0 | ND < 1.0 | ND < 25.0 |
| **DIPE:** | ND < 25.0 | ND < 0.5 | ND < 0.5 | ND < 25.0 | ND < 0.5 | ND < 0.5 | ND < 12.5 |
| **TAME:** | ND < 25.0 | ND < 0.5 | ND < 0.5 | ND < 25.0 | ND < 0.5 | ND < 0.5 | **38.8** |
| **ETBE:** | ND < 25.0 | ND < 0.5 | ND < 0.5 | ND < 25.0 | ND < 0.5 | ND < 0.5 | ND < 12.5 |
| **TBA:** | ND < 2,500 | ND < 50.0 | ND < 50.0 | ND < 2,500 | ND < 50.0 | ND < 50.0 | ND < 1,250 |
| **TPHd:** | **16,100** | **31,300** | ND < 50 | **156** | ND < 50 | ND < 50 | **2,950** |
| **TPHmo:** | **2,690** | **7,150** | ND <50 | ND < 50 | ND < 50 | ND < 50 | ND < 50 |

ND = non-detectable

## COMMENTS AND RECOMMENDATIONS

On July 10, 2005, the 13th groundwater monitoring event for the three (3) on-site monitoring

wells and four (4) off-site monitoring wells was conducted at the Crescent Shell at 890 L Street in Crescent City, California. A summary of the results are presented below.

- The depth to groundwater ranged between 8.05 feet btoc to 10.92 feet btoc. Groundwater flow was towards the east-southeast at a gradient of 0.01 feet per foot.

- Groundwater samples were collected and analyzed for TPHg, BTXE, five-fuel oxygenates, TPHd, and TPHmo. Laboratory results reported TPHg in five (5) of the seven (7) wells at concentrations ranging from 53.2 ppb (MW-7) to 22,200 ppb (MW-1). Benzene was reported in four (4) wells at concentrations ranging from 3.3 ppb (MW-2) to 1,540 ppb (MW-8). Toluene was reported in four (4) wells at concentrations ranging between 47.5 ppb (MW-8) to 2,220 ppb (MW-1). Xylenes were reported in four (4) wells at concentrations ranging from 159 ppb (MW-2) to 4,560 ppb (MW-1). Ethylbenzene was reported in four wells at concentrations ranging between 29.3 ppb (MW-2) and 2,180 ppb (MW-1). With the exception of TAME in well MW-8 at a concentration of 38.8 ppb, no fuel oxygenates were reported in any wells. TPHd was reported in four (4) wells at concentrations ranging from 156 ppb (MW-5) to 31,300 ppb (MW-2). TPHmo was reported in two (2) wells at concentrations of 2,690 ppb (MW-1) and 7,150 ppb (MW-2). No petroleum hydrocarbons were reported in wells MW-4 or MW-6.

Based upon these results the following observations and conclusions have been made.

- TPHg has consistently been reported in wells MW-1, MW-2 (14 sampling events each), and MW-5 (10 sampling events) at fluctuating concentrations. TPHg has also been reporting in both the sampling events for MW-8, with concentrations almost tripled since the previous and initial sampling event. The TPHg concentration reported in well MW-1 during the recent monitoring event was the highest concentration since the initial sampling event during the second quarter 2002. In well MW-2, TPHg concentrations

have reduced by a factor of ten (10) since the last quarter; however, the recent concentration is more consistent with historical levels. In well MW-5 TPHg concentrations have reduced slightly since the last quarter, however, the concentration is still significantly greater than the levels reported from the well between July 2003 and January 2005. In well MW-7, TPHg was reported for only the second time since the implementation of monitoring, but only slightly above the method reporting limit. The historical fluctuations of TPHg concentrations over time for all wells are shown in Figures 5 through 10.

- BTXE has consistently been reported in wells MW-1, MW-2, and MW-5, during each wells sampling history. Of the remaining wells, the BTEX compounds were only reported in well MW-4, during the second quarter 2005 event, and in wells MW-6 and MW-7 during the fourth quarter 2004. The historical fluctuations of BTXE concentrations over time for all wells are shown in Figures 5 through 8.

- Since the implementation of groundwater monitoring, fuel oxygenates have generally been absent in all wells. The exceptions are MTBE that was reported in well MW-1 (349 ppb) during the fourth quarter 2002 and in well MW-4 (0.7 ppb) during the well installation sampling event, and TAME that was reported in well MW-8 (38.8 ppb) during the recent monitoring event.

- With the exception of the first quarter of 2004, TPHd has consistently been reported in wells MW-1 and MW-2 since the inception of the monitoring. During the first seven (7) monitoring events, TPHd concentrations in well MW-1 were relatively consistent; however, the TPHd levels have doubled in each of the last quarters. As in well MW-1, significant increases in the TPHd concentration occurred in well MW-2, during the last two (2) quarters, however, the TPHd concentration significantly decreased during the last quarter of sampling compared to that of the previous results. During the previous monitoring event (second quarter 2005), TPHd was reported in wells MW-4, MW-6, and

MW-7, for the first time; however no TPHd was reported in these wells during the recent event. In well MW-5, TPHd was reported during the well installation sampling event and the second quarter of 2005. TPHd concentrations have decreased by a factor of $10^2$ in well MW-5 since the last quarter of sampling. In well MW-8, TPHd was reported during the second quarter of 2005 at a level significantly higher than the reporting limit. TPHd concentrations have decreased by a factor of 10 in well MW-8. The historical fluctuations of TPHd concentrations over time for all wells are shown in Figures 5 through 10.

- TPHmo was reported in well MW-1 during the initial sampling event. Since that time no TPHmo has been reported in any of the wells until the monitoring event conducted during the second quarter 2005, when it was reported in all wells. During the most recent monitoring event, TPHmo was only reported in wells MW-1 and MW-2, with the concentration in well MW-2 significantly reduced.

Based on the results of the July 2005 monitoring event and historical results, the following future activities are proposed. These activities were initially proposed in the September 2005 Report of Findings that was previously submitted to the NCRWQCB.

- Quarterly groundwater monitoring of all monitoring wells will be continued. Until the April 2005 monitoring event, no significant contamination had been identified in wells MW-4, MW-6, or MW-7 for eight (8) consecutive monitoring events, when TPHd and TPHmo was reported. The sudden presence of these contaminants was believed to be erroneous. The recent sampling did not report any TPHd or TPHmo in these wells. Therefore, in accordance with the approach presented in the recent Report of Findings, these wells will be sampled for one more monitoring event and if no contaminants are reported, sampling and analysis of these wells will be reduced to an annual occurrence, although quarterly groundwater level measurements will be continued.

- Groundwater contamination is widespread and has migrated off-site. However, the full downgradient extent of the contamination has not been fully defined, and further subsurface investigation is required. Current subsurface investigations have indicated that the groundwater contamination has migrated to the east, beneath L Street (Highway 101 South), and is likely beneath the properties on the eastside of L Street. Further investigation will likely involve drilling on private property, not owned by BO&T; hence access agreements with the property owners will be required, prior to determining the scope of work. Any new subsurface investigation will likely require the collection of grab groundwater from soil boring and the installation of groundwater monitoring wells, but based on previous soil sampling results, no further laboratory analysis of soil samples will be required. Any new well(s) would be incorporated into the ongoing groundwater monitoring program.

- Previous depth discrete groundwater sampling had indicated that the contamination has vertically migrated. To confirm, evaluate, and monitor any vertical migration of contaminants it is proposed to install two sets of nested wells at the site. These well sets should be installed in areas of known contamination, where previous investigations have identified high levels of contamination and vertical migration has previously been identified. The new wells would be incorporated into the ongoing groundwater monitoring program.

- Levels of TPHg within the vadose zone in the areas adjacent to the former gasoline USTs and the dispensers exceed the standard clean-up standard of 100 ppm, and will likely require remedial action. However, based on historical soil sampling, the shallow depth to groundwater and the sandy nature of the soil which allows contamination to quickly migrate to groundwater, it is expected that the actual extent of the soil contamination will be minimal. Therefore, due to the shallow depth, the contaminated soil can be excavated and either disposed offsite or treated on-site with regulatory agency approval. The mode of treatment and/or disposal is dependant on the volume excavated and the contaminant

levels in the excavated soils.

- Subsurface sampling, along with groundwater monitoring has indicated that groundwater contamination is at a level which will require remedial action. At the current time, no site-wide groundwater remedial action is being proposed, and will not be proposed until the full extent of the groundwater contamination has been delineated. However, if free product is identified in any wells, a free product removal system will be implemented immediately and interim remedial actions will be evaluated.

# CERTIFICATION

This report was prepared under the direct supervision of a California registered geologist at SounPacific. All information provided in this report including statements, conclusions and recommendations are based solely upon field observations and analyses performed by a state-certified laboratory. SounPacific is not responsible for laboratory errors.

SounPacific promises to perform all its work in a manner that is currently used by members in similar professions working in the same geographic area. SounPacific will do whatever is reasonable to ensure that data collection is accurate. Please note however, that rain, buried utilities, and other factors can influence groundwater depths, directions and other factors beyond what SounPacific could reasonably determine.

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# ATTACHMENTS

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## APPENDICES

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Appendix B: Standard Operating Procedures
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# Tables & Chart

# Table 1
## Water Levels
Crescent Shell
890 L Street
Crescent City, California 95531

| Sample Location | Date | Depth to Bottom/ Feet BGS | Survey Height/ Feet Above MSL | Depth to Water/ Feet BGS | Adjusted Elevation/ Feet Above MSL | Thickness of Floating Product/ Feet | Corrected Adjusted Elevation/ feet Above MSL |
|---|---|---|---|---|---|---|---|
| MW-1 | 5/6/2002 | 13.41 | 36.78 | 7.70 | 29.08 | ---- | ---- |
| | 8/4/2002 | 13.44 | 36.78 | 9.88 | 26.90 | ---- | ---- |
| | 11/6/2002 | 13.42 | 36.78 | 11.69 | 25.09 | ---- | ---- |
| | 2/7/2003 | 13.47 | 36.78 | 3.97 | 32.81 | ---- | ---- |
| | 4/22/2003 | 13.65 | 36.78 | 3.82 | 32.96 | ---- | ---- |
| | 5/22/2003 | 13.65 | 36.78 | 5.64 | 31.14 | SHEEN | ---- |
| | 6/26/2003 | 13.65 | 36.78 | 8.01 | 28.77 | 0.01 | 28.77 |
| | 7/22/2003 | 13.65 | 36.78 | 9.00 | 27.78 | 0.00 | 27.78 |
| | 8/25/2003 | 13.65 | 36.78 | 9.92 | 26.86 | 0.00 | 26.86 |
| | 9/22/2003 | 13.65 | 36.78 | 10.51 | 26.27 | 0.00 | 26.27 |
| | 10/23/2003 | 13.65 | 36.78 | 11.11 | 25.67 | 0.00 | 25.67 |
| | 11/25/2003 | 13.65 | 36.78 | 10.63 | 26.15 | 0.00 | 26.15 |
| | 12/16/2003 | 13.65 | 36.78 | 7.41 | 29.37 | 0.00 | 29.37 |
| | 1/23/2004 | 13.65 | 36.78 | 4.41 | 32.37 | 0.00 | 32.37 |
| | 2/24/2004 | 13.65 | 36.78 | 2.60 | 34.18 | 0.00 | 34.18 |
| | 3/26/2004 | 13.65 | 36.78 | 4.51 | 32.27 | 0.00 | 32.27 |
| | 4/29/2004 | 13.65 | 36.78 | 5.75 | 31.03 | 0.00 | 31.03 |
| | 7/30/2004 | 13.68 | 36.78 | 9.94 | 26.84 | 0.00 | 26.84 |
| | 11/2/2004 | 13.67 | 36.78 | 10.39 | 26.39 | 0.00 | 26.39 |
| | 1/30/2005 | 13.40 | 36.78 | 6.76 | 30.02 | 0.00 | 30.02 |
| | 4/14/2005 | 13.39 | 36.78 | 3.60 | 33.18 | 0.00 | 33.18 |
| | 7/10/2005 | 13.40 | 36.78 | 8.05 | 28.73 | 0.00 | 28.73 |
| MW-2 | 5/6/2002 | 13.48 | 37.20 | 9.25 | 27.95 | ---- | ---- |
| | 8/4/2002 | 13.49 | 37.20 | 11.24 | 25.96 | ---- | ---- |
| | 11/6/2002 | 13.50 | 37.20 | 12.90 | 24.30 | ---- | ---- |
| | 2/7/2003 | 13.52 | 37.20 | 6.38 | 30.82 | ---- | ---- |
| | 4/22/2003 | 13.41 | 37.20 | 6.33 | 30.87 | ---- | ---- |
| | 5/22/2003 | 13.41 | 37.20 | 7.74 | 29.46 | 0.00 | 29.46 |
| | 6/26/2003 | 13.41 | 37.20 | 9.58 | 27.62 | 0.00 | 27.62 |
| | 7/22/2003 | 13.41 | 37.20 | 10.43 | 26.77 | 0.00 | 26.77 |
| | 8/25/2003 | 13.41 | 37.20 | 11.26 | 25.94 | 0.00 | 25.94 |
| | 9/22/2003 | 13.41 | 37.20 | 11.8 | 25.40 | 0.00 | 25.4 |
| | 10/23/2003 | 13.41 | 37.20 | 12.35 | 24.85 | 0.00 | 24.85 |
| | 11/25/2003 | 13.41 | 37.20 | 12.83 | 24.37 | 0.00 | 24.37 |
| | 12/16/2003 | 13.41 | 37.20 | 7.89 | 29.31 | 0.00 | 29.31 |
| | 1/23/2004 | 13.41 | 37.20 | 6.69 | 30.51 | 0.00 | 30.51 |
| | 2/24/2004 | 13.41 | 37.20 | 4.37 | 32.83 | 0.00 | 32.83 |
| | 3/26/2004 | 13.41 | 37.20 | 6.33 | 30.87 | 0.00 | 30.87 |
| | 4/29/2004 | 13.41 | 37.20 | 7.65 | 29.55 | 0.00 | 29.55 |
| | 7/30/2004 | 13.74 | 37.20 | 11.27 | 25.93 | 0.00 | 25.93 |
| | 11/2/2004 | 13.43 | 37.20 | 11.55 | 25.65 | 0.00 | 25.65 |
| | 1/30/2005 | 13.75 | 37.20 | 8.37 | 28.83 | 0.00 | 28.83 |
| | 4/14/2005 | 13.77 | 37.20 | 5.58 | 31.62 | 0.00 | 31.62 |
| | 7/10/2005 | 13.72 | 37.20 | 9.57 | 27.63 | 0.00 | 27.63 |
| MW-4 | 4/22/2003 | 18.92 | 36.86 | 5.20 | 31.66 | ---- | ---- |
| | 5/22/2003 | 18.91 | 36.86 | 6.74 | 30.12 | 0.01 | 30.13 |
| | 6/26/2003 | 18.92 | 36.86 | 9.64 | 27.22 | 0.01 | 27.23 |
| | 7/22/2003 | 18.92 | 36.86 | 9.51 | 27.35 | 0.01 | 27.36 |
| | 8/25/2003 | 18.92 | 36.86 | 10.38 | 26.48 | 0.01 | 26.49 |
| | 9/22/2003 | 18.92 | 36.86 | 10.94 | 25.92 | 0.00 | 25.92 |
| | 10/23/2003 | 18.92 | 36.86 | 11.52 | 25.34 | 0.00 | 25.34 |
| | 11/25/2003 | 18.92 | 36.86 | 11.04 | 25.82 | 0.00 | 25.82 |
| | 12/16/2003 | 18.92 | 36.86 | 8.05 | 28.81 | 0.00 | 28.81 |
| | 1/23/2004 | 18.92 | 36.86 | 5.65 | 31.21 | 0.00 | 31.21 |
| | 2/24/2004 | 18.92 | 36.86 | 3.82 | 33.04 | 0.00 | 33.04 |
| | 3/26/2004 | 18.92 | 36.86 | 5.79 | 31.07 | 0.00 | 31.07 |
| | 4/29/2004 | 18.92 | 36.86 | 6.79 | 30.07 | 0.00 | 30.07 |
| | 7/30/2004 | 18.91 | 36.86 | 10.43 | 26.43 | 0.00 | 26.43 |
| | 11/2/2004 | 18.91 | 36.86 | 10.83 | 26.03 | 0.00 | 26.03 |
| | 1/30/2005 | 18.91 | 36.86 | 7.54 | 29.32 | 0.00 | 29.32 |
| | 4/14/2005 | 18.93 | 36.86 | 4.82 | 32.04 | 0.00 | 32.04 |
| | 7/10/2005 | 18.95 | 36.86 | 8.67 | 28.19 | 0.00 | 28.19 |

Corrected Adjusted Elevation =
Adjusted Groundwater Elevation + ( Thickness of product x (density of product/density of water))
Density of product = 0.73 g/mL (density of oil)
Density of water = 1g/mL

# Table 1 (cont.)
## Water Levels
Crescent Shell
890 L Street
Crescent City, California 95531

| Sample Location | Date | Depth to Bottom/ Feet BGS | Survey Height/ Feet Above MSL | Depth to Water/ Feet BGS | Adjusted Elevation/ Feet Above MSL | Thickness of Floating Product/ Feet | Corrected Adjusted Elevation/ feet Above MSL |
|---|---|---|---|---|---|---|---|
| MW-5 | 4/22/2003 | 18.83 | 37.27 | 6.17 | 31.10 | ---- | ---- |
| | 5/22/2003 | 18.87 | 37.27 | 7.60 | 29.67 | 0.01 | 29.68 |
| | 6/26/2003 | 18.83 | 37.27 | 9.46 | 27.81 | SHEEN | ---- |
| | 7/22/2003 | 18.83 | 37.27 | 10.31 | 26.96 | SHEEN | ---- |
| | 8/25/2003 | 18.83 | 37.27 | 11.17 | 26.10 | 0.00 | 26.10 |
| | 9/22/2003 | 18.83 | 37.27 | 11.71 | 25.56 | 0.00 | 25.56 |
| | 10/23/2003 | 18.83 | 37.27 | 12.26 | 25.01 | 0.00 | 25.01 |
| | 11/25/2003 | 18.83 | 37.27 | 12.77 | 24.50 | 0.00 | 24.50 |
| | 12/16/2003 | 18.83 | 37.27 | 8.09 | 29.18 | 0.00 | 29.18 |
| | 1/23/2004 | 18.83 | 37.27 | 6.53 | 30.74 | 0.00 | 30.74 |
| | 2/24/2004 | 18.83 | 37.27 | 4.39 | 32.88 | 0.00 | 32.88 |
| | 3/26/2004 | 18.83 | 37.27 | 6.41 | 30.86 | 0.00 | 30.86 |
| | 4/29/2004 | 18.83 | 37.27 | 7.55 | 29.72 | 0.00 | 29.72 |
| | 7/30/2004 | 18.81 | 37.27 | 11.18 | 26.09 | 0.00 | 26.09 |
| | 11/2/2004 | 18.86 | 37.27 | 11.48 | 25.79 | 0.00 | 25.79 |
| | 1/30/2005 | 18.79 | 37.27 | 8.26 | 29.01 | 0.00 | 29.01 |
| | 4/14/2005 | 18.78 | 37.27 | 5.51 | 31.76 | 0.00 | 31.76 |
| | 7/10/2005 | 18.87 | 37.27 | 9.47 | 27.80 | 0.00 | 27.80 |
| MW-6 | 4/22/2003 | 18.74 | 37.80 | 7.35 | 30.45 | ---- | ---- |
| | 5/22/2003 | 18.69 | 37.80 | 8.73 | 29.07 | SHEEN | ---- |
| | 6/26/2003 | 18.74 | 37.80 | 10.48 | 27.32 | 0.00 | 27.32 |
| | 7/22/2003 | 18.74 | 37.80 | 11.31 | 26.49 | 0.00 | 26.5 |
| | 8/25/2003 | 18.74 | 37.80 | 12.13 | 25.67 | 0.00 | 25.67 |
| | 9/22/2003 | 18.74 | 37.80 | 12.67 | 25.13 | 0.00 | 25.13 |
| | 10/23/2003 | 18.74 | 37.80 | 13.18 | 24.62 | 0.00 | 24.62 |
| | 11/25/2003 | 18.74 | 37.80 | 12.66 | 25.14 | 0.00 | 25.14 |
| | 12/16/2003 | 18.74 | 37.80 | 8.42 | 29.38 | 0.00 | 29.38 |
| | 1/23/2004 | 18.74 | 37.80 | 7.71 | 30.09 | 0.00 | 30.09 |
| | 2/24/2004 | 18.74 | 37.80 | 5.24 | 32.56 | 0.00 | 32.56 |
| | 3/26/2004 | 18.74 | 37.80 | 7.15 | 30.65 | 0.00 | 30.65 |
| | 4/29/2004 | 18.74 | 37.80 | 8.60 | 29.20 | 0.00 | 29.20 |
| | 7/30/2004 | 18.69 | 37.80 | 12.14 | 25.66 | 0.00 | 25.66 |
| | 11/2/2004 | 18.63 | 37.80 | 12.37 | 25.43 | 0.00 | 25.43 |
| | 1/30/2005 | 18.70 | 37.80 | 9.26 | 28.54 | 0.00 | 28.54 |
| | 4/14/2005 | 18.68 | 37.80 | 6.51 | 31.29 | 0.00 | 31.29 |
| | 7/10/2005 | 18.64 | 37.80 | 10.47 | 27.33 | 0.00 | 27.33 |
| MW-7 | 4/22/2003 | 18.31 | 36.88 | 4.3 | 32.57 | ---- | ---- |
| | 5/22/2003 | 18.30 | 36.88 | 5.95 | 30.93 | 0.00 | 30.93 |
| | 6/26/2003 | 18.31 | 36.88 | 8.29 | 28.59 | 0.00 | 28.59 |
| | 7/22/2003 | 18.31 | 36.88 | 9.29 | 27.59 | 0.00 | 27.59 |
| | 8/25/2003 | 18.31 | 36.88 | 10.23 | 26.65 | 0.00 | 26.65 |
| | 9/22/2003 | 18.31 | 36.88 | 10.81 | 26.07 | 0.00 | 26.07 |
| | 10/23/2003 | 18.31 | 36.88 | 11.38 | 25.50 | 0.00 | 25.50 |
| | 11/25/2003 | 18.31 | 36.88 | 10.84 | 26.04 | 0.00 | 26.04 |
| | 12/16/2003 | 18.31 | 36.88 | 6.75 | 30.13 | 0.00 | 30.13 |
| | 1/23/2004 | 18.31 | 36.88 | 4.80 | 32.08 | 0.00 | 32.08 |
| | 2/24/2004 | 18.31 | 36.88 | 2.65 | 34.23 | 0.00 | 34.23 |
| | 3/26/2004 | 18.31 | 36.88 | 4.59 | 32.29 | 0.00 | 32.29 |
| | 4/29/2004 | 18.31 | 36.88 | 5.93 | 30.95 | 0.00 | 30.95 |
| | 7/30/2004 | 18.30 | 36.88 | 10.21 | 26.67 | 0.00 | 26.67 |
| | 11/2/2004 | 18.22 | 36.88 | 10.53 | 26.35 | 0.00 | 26.35 |
| | 1/30/2005 | 18.31 | 36.88 | 6.84 | 30.04 | 0.00 | 30.04 |
| | 4/14/2005 | 18.23 | 36.88 | 3.76 | 33.12 | 0.00 | 33.12 |
| | 7/10/2005 | 18.45 | 36.88 | 8.30 | 28.58 | 0.00 | 28.58 |
| MW-8 | 4/14/2005 | 14.20 | 37.88 | 7.32 | 30.56 | 0.00 | 30.56 |
| | 7/10/2005 | 14.22 | 37.88 | 10.92 | 26.96 | 0.00 | 26.96 |

Corrected Adjusted Elevation =
Adjusted Groundwater Elevation + ( Thickness of product x (density of product/density of water))
Density of product = 0.73 g/mL (density of oil)
Density of water = 1g/mL

# Table 2
## Groundwater Analytical Results
Crescent Shell
890 L Street
Crescent City, California 95531

| Sample Location | Annual Event | Sample Event | Sample Date | TPHg (ppb) | Benzene (ppb) | Toluene (ppb) | Xylenes (ppb) | Ethylbenzene (ppb) | MTBE (ppb) | DIPE (ppb) | TAME (ppb) | ETBE (ppb) | TBA (ppb) | TPHd (ppb) | TPHmo (ppb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1 | Second Quarter | First Quarterly | 5/6/2002 | **52,800** | ND < 300 | ND < 300 | ND < 300 | **3,730** | ND < 300 | ND < 500 | ND < 500 | ND < 500 | ND < 100,000 | **3,180** | **822** |
| | Third Quarter | Second Quarterly | 8/4/2002 | **10,400** | ND < 60 | ND < 60 | **859** | **5,000** | ND < 400 | ND < 100 | ND < 100 | ND < 100 | ND < 20,000 | **4,670** | ND < 50 |
| | Fourth Quarter | Third Quarterly | 11/6/2002 | **6,030** | ND < 60 | **103** | **313** | **4,370** | **349** | ND < 100 | ND < 100 | ND < 100 | ND < 20,000 | **2,080** | ND < 50 |
| | First Quarter | Fourth Quarterly | 2/7/2003 | **14,000** | **32** | **37** | **212** | **2,200** | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | **1,800** | ND < 500 |
| | Second Quarter | Well Installation | 4/22/2003 | **13,000** | ND < 50 | ND < 50 | **190** | **1,900** | ND < 50 | ND < 50 | ND < 50 | ND < 50 | ND < 500 | **4,000** | ND < 500 |
| | Third Quarter | Fifth Quarterly | 7/22/2003 | **920** | **11** | **40** | **266** | **1,100** | ND < 5.0 | ND < 5.0 | ND < 5.0 | ND < 5.0 | ND < 50 | **6,800** | ND < 500 |
| | Fourth Quarter | Sixth Quarterly | 10/23/2003 | **21,000** | **18** | **51** | **235** | **6,100** | ND < 10 | ND < 10 | ND < 10 | ND < 10 | ND < 100 | **4,900** | ND < 500 |
| | First Quarter | Seventh Quarterly | 1/23/2004 | **7,600** | **73** | ND < 50 | **130** | **1,800** | ND < 50 | ND < 50 | ND < 50 | ND < 50 | ND < 500 | ND < 50 | ND < 500 |
| | Second Quarter | Eighth Quarterly | 4/29/2004 | **16,000** | ND < 50 | ND < 50 | **91** | **2,000** | ND < 50 | ND < 50 | ND < 50 | ND < 50 | ND < 500 | **4,400** | ND < 500 |
| | Third Quarter | Ninth Quarterly | 7/30/2004 | **13,000** | ND < 50 | ND < 50 | **110** | **3,700** | ND < 50 | ND < 50 | ND < 50 | ND < 50 | ND < 500 | **6,200** | ND < 500 |
| | Fourth Quarter | Tenth Quarterly | 11/2/2004 | **14,000** | ND < 50 | **76** | **304** | **4,200** | ND < 50 | ND < 50 | ND < 50 | ND < 50 | ND < 500 | **4,100** | ND < 500 |
| | First Quarter | Eleventh Quarterly | 1/30/2005 | **8,040** | **21.0** | **11.0** | **1,940** | **1,550** | ND < 20.0 | ND < 10.0 | ND < 100 | ND < 100 | ND < 1,000 | **3,340** | ND < 50 |
| | Second Quarter | Twelfth Quarterly | 4/14/2005 | **16,300** | ND < 10 | **4,770** | **57.6** | **1,990** | ND < 20.0 | ND < 10.0 | ND < 10.0 | ND < 10.0 | ND < 1,000 | **8,340** | **1,830** |
| | Third Quarter | Thirteenth Quarterly | 7/10/2005 | **22,200** | **34.0** | **2,220** | **4,560** | **2,180** | ND < 50.0 | ND < 25.0 | ND < 25.0 | ND < 25.0 | ND < 2,500 | **16,100** | **2,690** |
| MW-2 | Second Quarter | First Quarterly | 5/6/2002 | **1,440** | **5.1** | ND < 0.3 | **2.6** | **54** | ND < 2.0 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 100 | **380** | ND < 50 |
| | Third Quarter | Second Quarterly | 8/4/2002 | **1,280** | **96.6** | **4.4** | **11.8** | **433** | ND < 2.0 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 100 | **1,300** | ND < 50 |
| | Fourth Quarter | Third Quarterly | 11/6/2002 | **479** | **75.1** | **4.1** | **15** | **237** | ND < 2.0 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 100 | **379** | ND < 50 |
| | First Quarter | Fourth Quarterly | 2/7/2003 | **470** | **2.2** | ND < 0.5 | ND < 1 | **0.6** | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | **90** | ND < 500 |
| | Second Quarter | Well Installation | 4/22/2003 | **740** | **2.0** | ND < 0.5 | ND < 1 | **5.7** | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | **270** | ND < 500 |
| | Third Quarter | Fifth Quarterly | 7/22/2003 | **2,000** | **11** | **1.8** | **10** | **120** | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | **530** | ND < 500 |
| | Fourth Quarter | Sixth Quarterly | 10/23/2003 | **3,100** | **180** | **7.8** | **22** | **770** | ND < 5.0 | ND < 5.0 | ND < 5.0 | ND < 5.0 | ND < 50 | **1,000** | ND < 500 |
| | First Quarter | Seventh Quarterly | 1/23/2004 | **150** | **1.0** | ND <0.5 | ND < 1 | **1.2** | ND <0.5 | ND <0.5 | ND <0.5 | ND <0.5 | ND < 5.0 | ND < 50 | ND < 500 |
| | Second Quarter | Eighth Quarterly | 4/29/2004 | **1,400** | **1.1** | ND < 0.5 | ND < 1 | **8.2** | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | **300** | ND < 500 |
| | Third Quarter | Ninth Quarterly | 7/30/2004 | **2,100** | **6.7** | **2.5** | **6.2** | **240** | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | **890** | ND < 500 |
| | Fourth Quarter | Tenth Quarterly | 11/2/2004 | **2,000** | **12** | ND < 5 | ND < 15 | **720** | ND < 5.0 | ND < 5.0 | ND < 5.0 | ND < 5.0 | ND < 50.0 | **560** | ND < 500 |
| | First Quarter | Eleventh Quarterly | 1/30/2005 | **566** | **0.5** | ND < 0.5 | ND < 1.0 | **0.5** | ND < 1.0 | ND < 0.5 | ND < 5.0 | ND < 5.0 | ND < 50.0 | **218** | ND < 50 |
| | Second Quarter | Twelfth Quarterly | 4/14/2005 | **10,300** | ND < 5.0 | **5,100** | **12.1** | **5.7** | ND < 10.0 | ND < 5.0 | ND < 5.0 | ND < 5.0 | ND < 500 | **128,000** | **39,800** |
| | Third Quarter | Thirteenth Quarterly | 7/10/2005 | **1,670** | **3.3** | **63.2** | **159** | **29.3** | ND < 1.0 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 50.0 | **31,300** | **7,150** |
| MW-4 | Second Quarter | Well Installation | 4/22/2003 | ND < 50 | ND < 0.5 | ND < 0.5 | ND < 1 | ND < 0.5 | **0.7** | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | ND < 50 | ND < 500 |
| | Third Quarter | Fifth Quarterly | 7/22/2003 | **78** | ND < 0.5 | ND < 0.5 | ND < 1 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | ND < 50 | ND < 500 |
| | Fourth Quarter | Sixth Quarterly | 10/23/2003 | ND < 50 | ND < 0.5 | ND < 0.5 | ND < 1 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | ND < 50 | ND < 500 |
| | First Quarter | Seventh Quarterly | 1/23/2004 | ND < 50 | ND < 0.5 | ND < 0.5 | ND < 1 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | ND < 50 | ND < 500 |
| | Second Quarter | Eighth Quarterly | 4/29/2004 | ND < 50 | ND < 0.5 | ND < 0.5 | ND < 1 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | ND < 50 | ND < 500 |
| | Third Quarter | Ninth Quarterly | 7/30/2004 | ND < 50 | ND < 0.5 | ND < 0.5 | ND < 1 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | ND < 50 | ND < 500 |
| | Fourth Quarter | Tenth Quarterly | 11/2/2004 | ND < 50 | ND < 0.5 | ND < 0.5 | ND < 1.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | ND < 50 | ND < 500 |
| | First Quarter | Eleventh Quarterly | 1/30/2005 | ND < 50 | ND < 0.5 | ND < 0.5 | ND < 1.0 | ND < 0.5 | ND < 1.0 | ND < 0.5 | ND <5.0 | ND < 5.0 | ND < 50 | ND < 50 | ND < 50 |
| | Second Quarter | Twelfth Quarterly | 4/14/2005 | ND < 50 | ND < 0.5 | ND < 0.5 | ND < 1.0 | **0.7** | ND < 1.0 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 50 | **303** | **132** |
| | Third Quarter | Thirteenth Quarterly | 7/10/2005 | ND < 50 | ND < 0.5 | ND < 0.5 | ND < 1.0 | ND < 0.5 | ND < 1.0 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 50.0 | ND < 50 | ND < 50 |

Notes:
TPHg: Total petroleum hydrocarbons as gasoline
TPHd: Total petroleum hydrocarbons as diesel
TPHmo: Total Petroleum hydrocarbons as motor oil
MTBE: Methyl tertiary butyl ether
TAME: Tertiary amyl methyl ether
TBA: Tertiary butanol
DIPE: Diisopropyl ether
ETBE: Ethyl tertiary butyl ether
ppb: parts per billion = µg/l = 1,000 mg/l = 0.001 ppm.
ND: Not detected at or above the method detection limit as shown.

# Table 2
## Groundwater Analytical Results
Crescent Shell
890 L Street
Crescent City, California 95531

| Sample Location | Annual Event | Sample Event | Sample Date | TPHg (ppb) | Benzene (ppb) | Toluene (ppb) | Xylenes (ppb) | Ethylbenzene (ppb) | MTBE (ppb) | DIPE (ppb) | TAME (ppb) | ETBE (ppb) | TBA (ppb) | TPHd (ppb) | TPHmo (ppb) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-5 | Second Quarter | Well Installation | 4/22/2003 | **4,800** | **98** | **20** | **530** | **86** | ND < 5.0 | ND < 5.0 | ND < 5.0 | ND < 5.0 | ND < 50 | **1,500** | ND < 500 |
| | Third Quarter | Fifth Quarterly | 7/22/2003 | **130** | **5.3** | ND < 0.5 | **4.4** | **7.2** | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | ND < 50 | ND < 500 |
| | Fourth Quarter | Sixth Quarterly | 10/23/2003 | **130** | **22** | ND < 0.5 | **2.6** | **13** | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | ND < 50 | ND < 500 |
| | First Quarter | Seventh Quarterly | 1/23/2004 | **170** | **3.9** | ND < 0.5 | ND < 0.5 | **3.2** | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | ND < 50 | ND < 500 |
| | Second Quarter | Eighth Quarterly | 4/29/2004 | **270** | **34** | **1.4** | **32.7** | **15** | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | ND < 50 | ND < 500 |
| | Third Quarter | Ninth Quarterly | 7/30/2004 | **73** | **11** | ND < 0.5 | **2.2** | **11** | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | ND < 50 | ND < 500 |
| | Fourth Quarter | Tenth Quarterly | 11/2/2004 | **140** | **26** | **0.5** | **13.0** | **25** | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | ND < 50 | ND < 500 |
| | First Quarter | Eleventh Quarterly | 1/30/2005 | **75.4** | **9.1** | **0.6** | **6.3** | **9.1** | ND < 1.0 | ND < 0.5 | ND < 5.0 | ND < 5.0 | ND < 50 | ND < 50 | ND < 50 |
| | Second Quarter | Twelfth Quarterly | 4/14/2005 | **19,200** | **5.2** | **9,270** | **13.2** | **3.8** | ND < 5.0 | ND < 2.5 | ND < 2.5 | ND < 2.5 | ND < 250 | **23,300** | **7,290** |
| | Third Quarter | Thirteenth Quarterly | 7/10/2005 | **16,600** | **68.0** | **2,120** | **3,970** | **655** | ND < 50.0 | ND < 25.0 | ND < 25.0 | ND < 25.0 | ND < 2,500 | **156** | ND < 50 |
| MW-6 | Second Quarter | Well Installation | 4/22/2003 | **82** | ND < 0.5 | ND < 0.5 | ND < 1 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | ND < 50 | ND < 500 |
| | Third Quarter | Fifth Quarterly | 7/22/2003 | ND < 50 | ND < 0.5 | ND < 0.5 | ND < 1 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | ND < 50 | ND < 500 |
| | Fourth Quarter | Sixth Quarterly | 10/23/2003 | ND < 50 | ND < 0.5 | ND < 0.5 | ND < 1 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | ND < 50 | ND < 500 |
| | First Quarter | Seventh Quarterly | 1/23/2004 | ND < 50 | ND < 0.5 | ND < 0.5 | ND < 5.0 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | ND < 50 | ND < 500 |
| | Second Quarter | Eighth Quarterly | 4/29/2004 | ND < 50 | ND < 0.5 | ND < 0.5 | ND < 1 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | ND < 50 | ND < 500 |
| | Third Quarter | Ninth Quarterly | 7/30/2004 | ND < 50 | ND < 0.5 | ND < 0.5 | ND < 1 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | ND < 50 | ND < 500 |
| | Fourth Quarter | Tenth Quarterly | 11/2/2004 | ND < 50 | ND < 0.5 | ND < 0.5 | ND < 1.5 | **0.7** | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | ND < 50 | ND < 500 |
| | First Quarter | Eleventh Quarterly | 1/30/2005 | ND < 50 | ND < 0.5 | ND < 0.5 | ND < 1.0 | ND < 0.5 | ND < 1.0 | ND < 0.5 | ND < 5.0 | ND < 5.0 | ND < 50 | ND < 50 | ND < 50 |
| | Second Quarter | Twelfth Quarterly | 4/14/2005 | ND < 50 | ND < 0.5 | ND < 0.5 | ND < 1.0 | ND < 0.5 | ND < 1.0 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 50 | **183** | **94** |
| | Third Quarter | Thirteenth Quarterly | 7/10/2005 | ND < 50.0 | ND < 0.5 | ND < 0.5 | ND < 1.0 | ND < 0.5 | ND < 1.0 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 50.0 | ND < 50 | ND < 50 |
| MW-7 | Second Quarter | Well Installation | 4/22/2003 | ND < 50 | ND < 0.5 | ND < 0.5 | ND < 1 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | ND < 50 | ND < 500 |
| | Third Quarter | Fifth Quarterly | 7/22/2003 | ND < 50 | ND < 0.5 | ND < 0.5 | ND < 1 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | ND < 50 | ND < 500 |
| | Fourth Quarter | Sixth Quarterly | 10/23/2003 | ND < 50 | ND < 0.5 | ND < 0.5 | ND < 1 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | ND < 50 | ND < 500 |
| | First Quarter | Seventh Quarterly | 1/23/2004 | ND < 50 | ND < 0.5 | ND < 0.5 | ND < 1 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | ND < 50 | ND < 500 |
| | Second Quarter | Eighth Quarterly | 4/29/2004 | **75** | ND < 0.5 | ND < 0.5 | ND < 1 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | ND < 50 | ND < 500 |
| | Third Quarter | Ninth Quarterly | 7/30/2004 | ND < 50 | ND < 0.5 | ND < 0.5 | ND < 1 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | ND < 50 | ND < 500 |
| | Fourth Quarter | Tenth Quarterly | 11/2/2004 | ND < 50 | ND < 0.5 | ND < 0.5 | ND < 1.5 | **0.5** | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 5.0 | ND < 50 | ND < 500 |
| | First Quarter | Eleventh Quarterly | 1/30/2005 | ND < 50 | ND < 0.5 | ND < 0.5 | ND < 1.0 | ND < 0.5 | ND < 1.0 | ND < 0.5 | ND < 5.0 | ND < 5.0 | ND < 50 | ND < 50 | ND < 50 |
| | Second Quarter | Twelfth Quarterly | 4/14/2005 | ND < 50 | ND < 0.5 | ND < 0.5 | ND < 1.0 | ND < 0.5 | ND < 1.0 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 50 | **150** | **140** |
| | Third Quarter | Thirteenth Quarterly | 7/10/2005 | **53.2** | ND < 0.5 | ND < 0.5 | ND < 1.0 | ND < 0.5 | ND < 1.0 | ND < 0.5 | ND < 0.5 | ND < 0.5 | ND < 50.0 | ND < 50 | ND < 50 |
| MW-8 | Second Quarter | Twelfth Quarterly | 4/14/2005 | **5,710** | **785** | **614** | **653** | **680** | ND < 12.5 | ND < 6.2 | ND < 6.2 | ND < 6.2 | ND < 625 | **40,600** | **12,300** |
| | Third Quarter | Thirteenth Quarterly | 7/10/2005 | **16,800** | **1,540** | **47.5** | **2,420** | **1,990** | ND < 25.0 | ND < 12.5 | **38.8** | ND < 12.5 | ND < 1,250 | **2,950** | ND < 50 |

Notes:
TPHg: Total petroleum hydrocarbons as gasoline
MTBE: Methyl tertiary butyl ether
DIPE: Diisopropyl ether
TAME: Tertiary amyl methyl ether
ETBE: Ethyl tertiary butyl ether
TBA: Tertiary butanol
TPHd: Total petroleum hydrocarbons as diesel
TPHmo: Total Petroleum hydrocarbons as motor oil
ppb: parts per billion = µg/l = 1,000 mg/l = 0.001 ppm
ND: Not detected at or above the method detection limit as shown

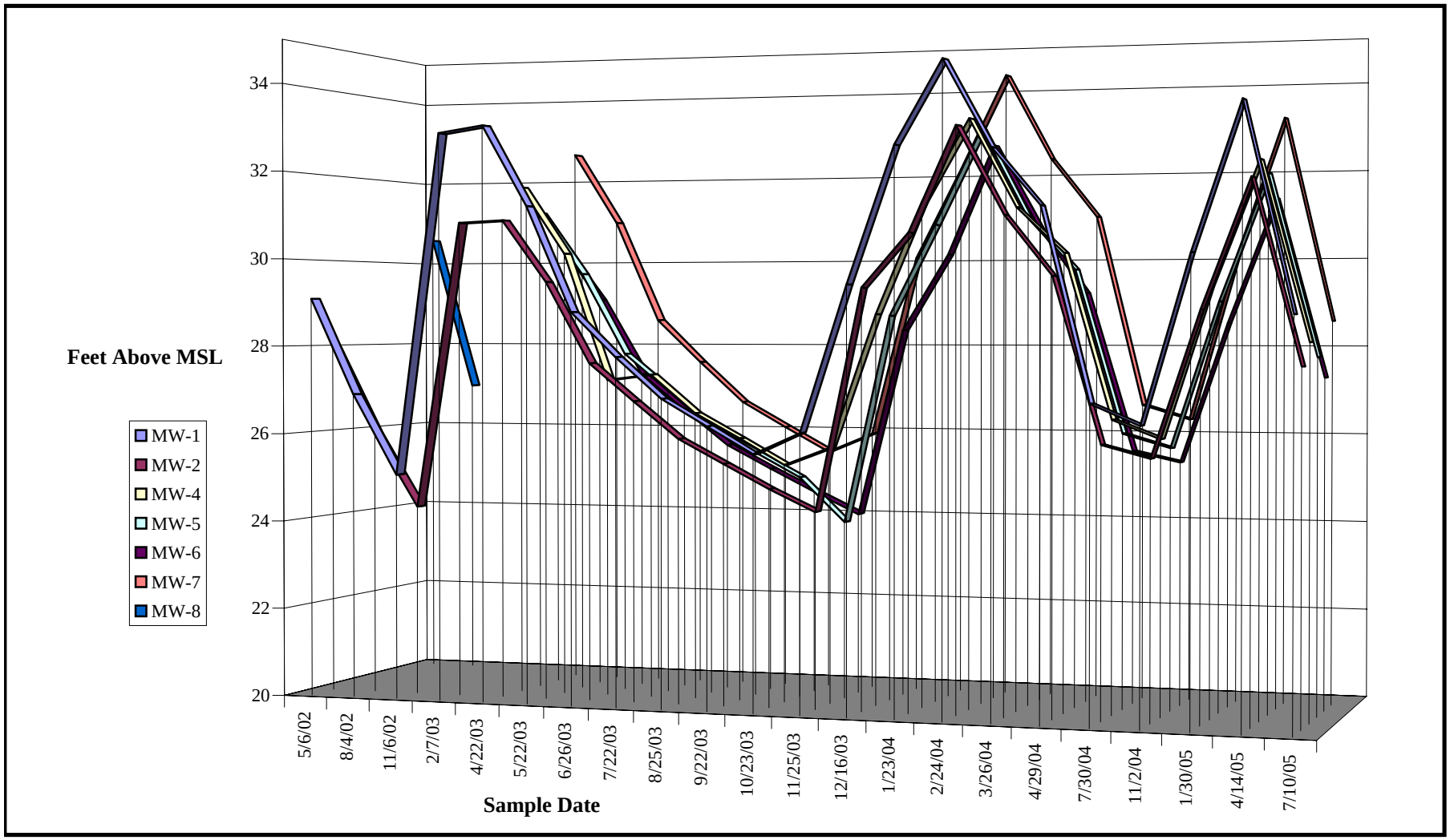
# Chart 1

## Monthly Hydrograph

Crescent Shell

890 L Street

Crescent City, California 95531



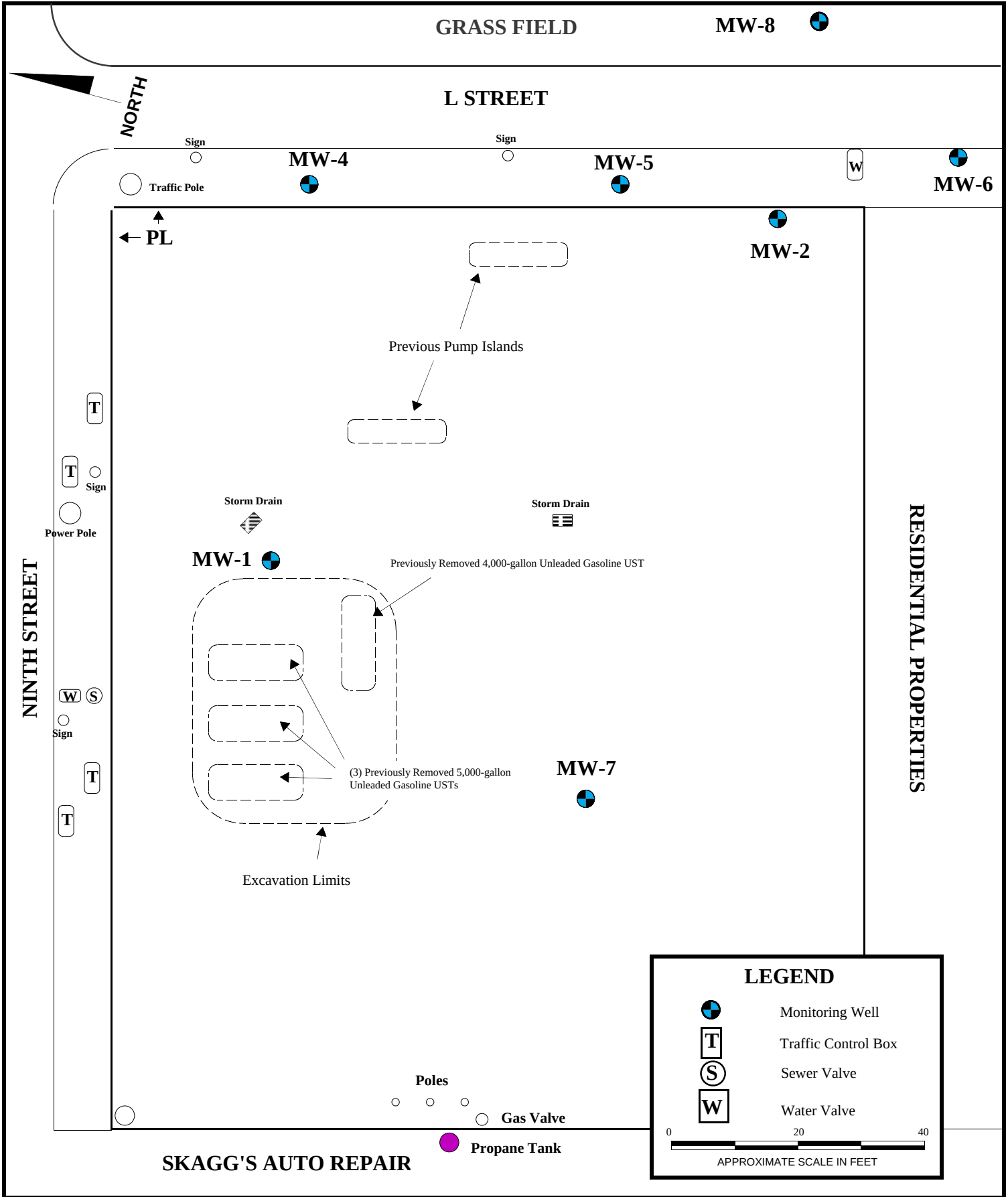
# Figures


SunPacific Environmental Services
(707) 269-0884

# AERIAL/TOPO MAP

Crescent Shell
890 L Street
Crescent City, California 95531

| Project No. | Report Date | Figure |
|---|---|---|
| SP-165 | 9/10/05 | 1 |

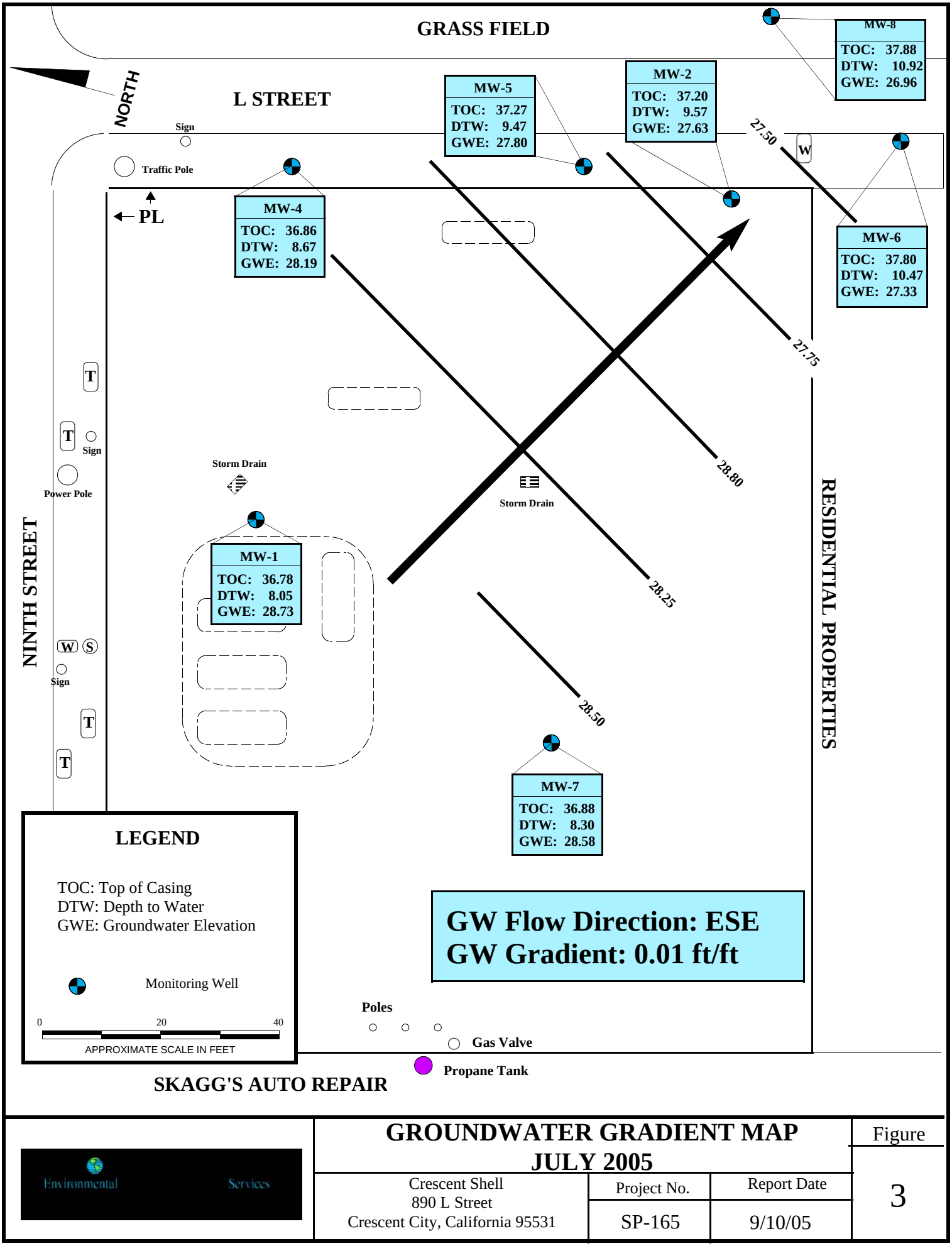



# SITE PLAN

Figure 2

Crescent Shell
890 L Street
Crescent City, California 95531

| Project No. | Report Date |
|---|---|
| SP-165 | 9/10/05 |

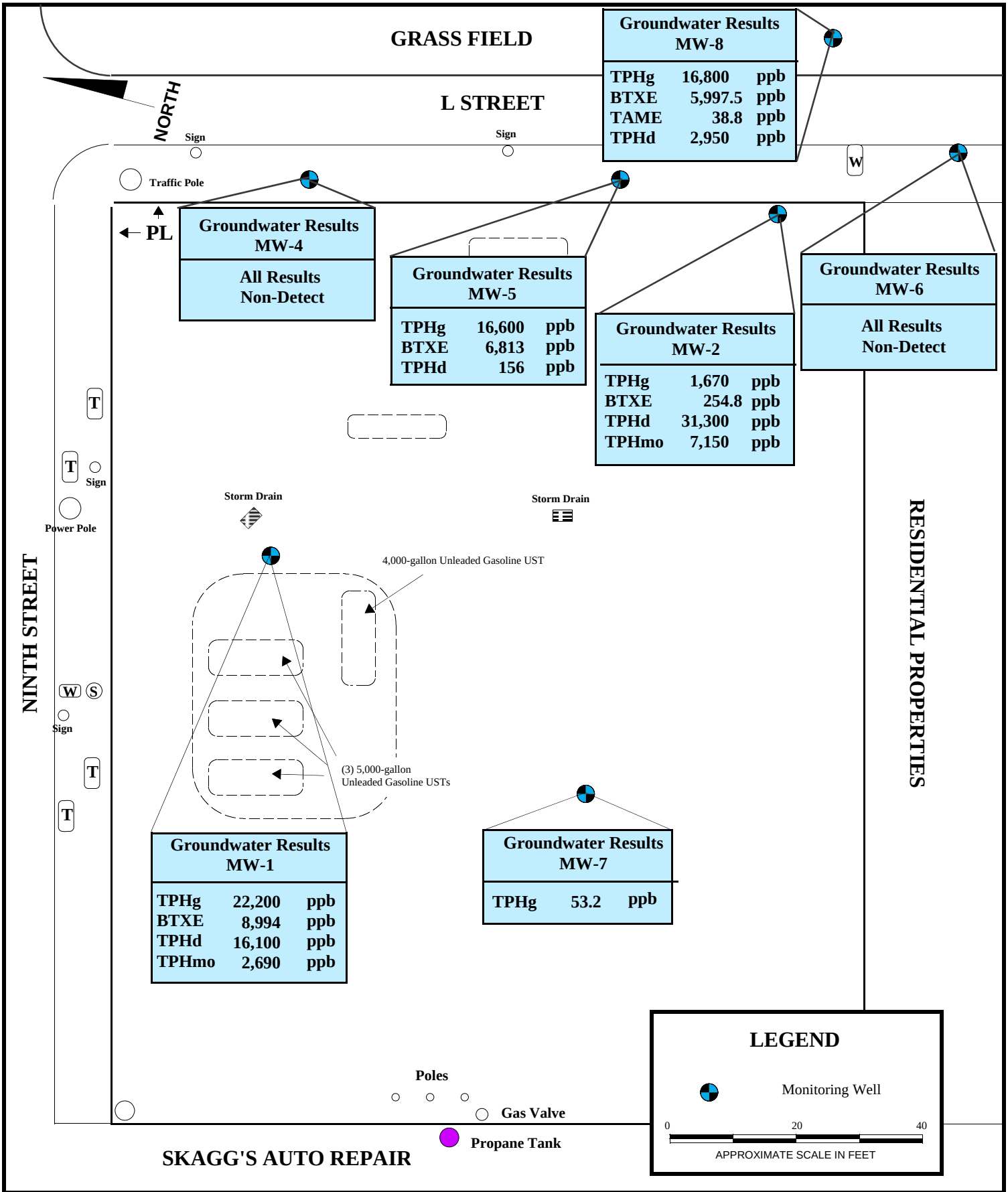



# GROUNDWATER GRADIENT MAP
# JULY 2005

Figure 3

Crescent Shell
890 L Street
Crescent City, California 95531

| Project No. | Report Date |
|---|---|
| SP-165 | 9/10/05 |

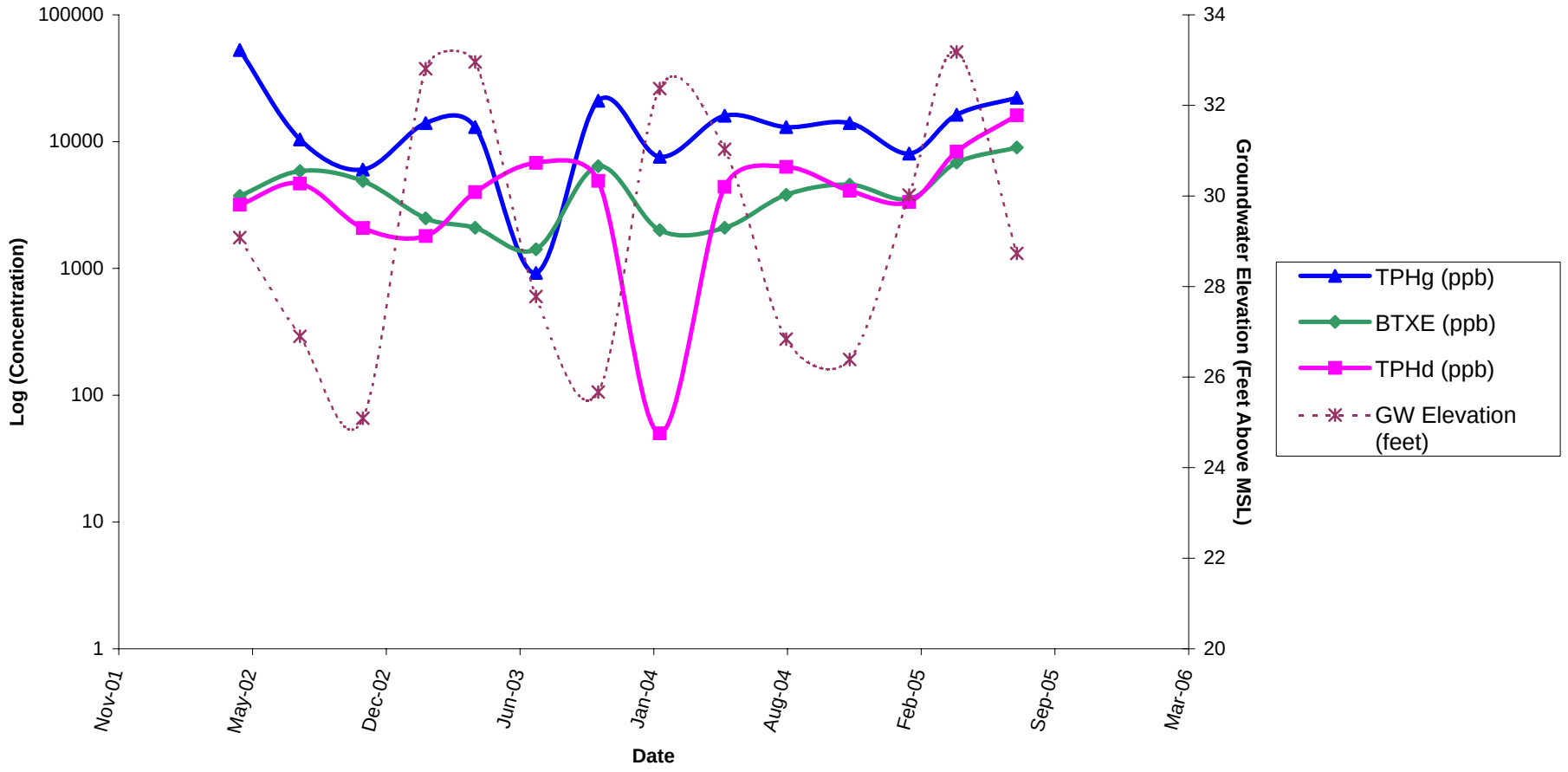



Environmental Services

# GROUNDWATER ANALYTICAL RESULTS

Figure 4

| Crescent Shell<br>890 L Street<br>Crescent City, California 95531 | Project No. | Report Date |
|---|---|---|
| | SP-165 | 9/10/05 |



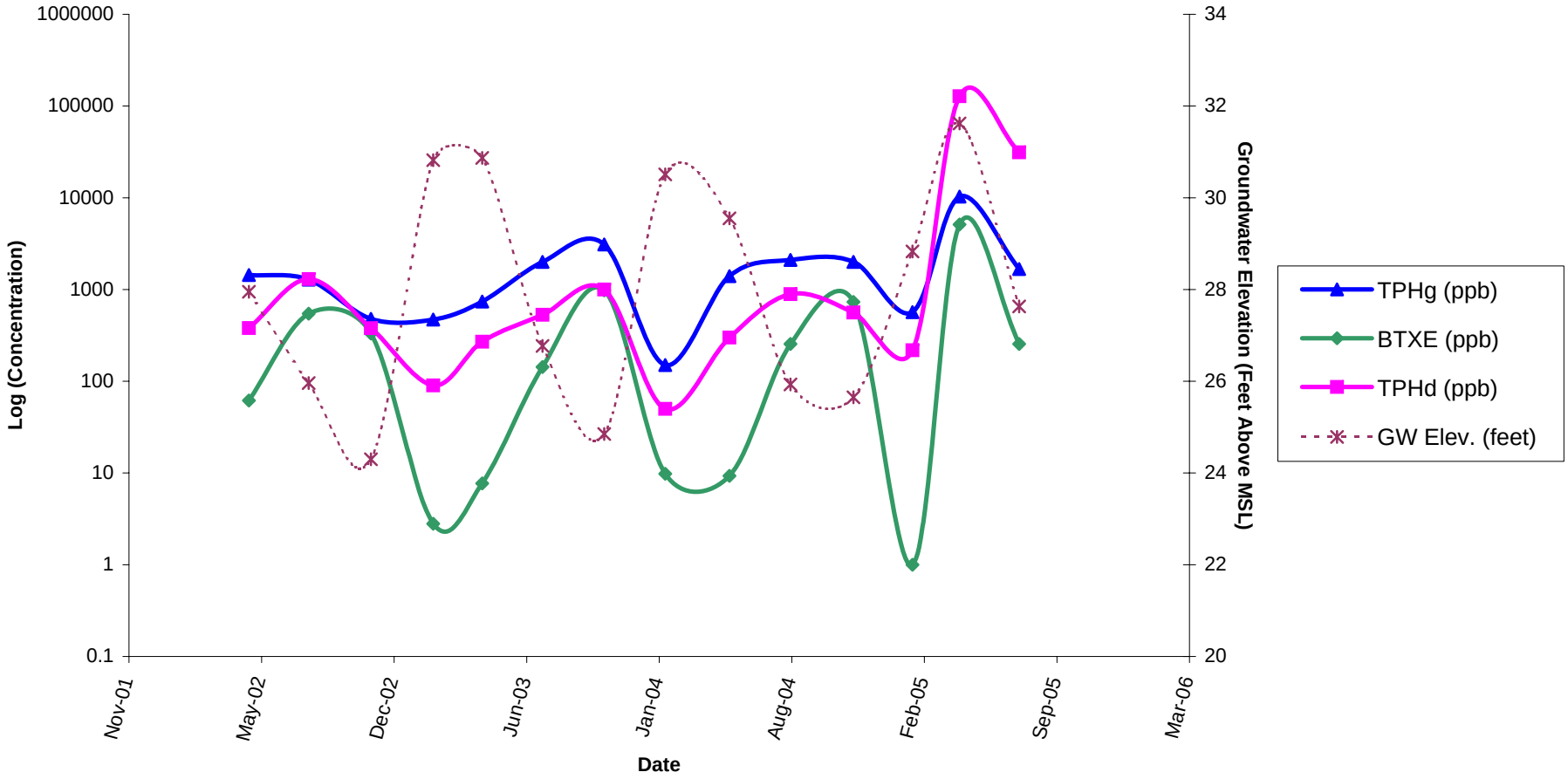

SunPacific Environmental Services
(707) 269-0884

**MW-1 HYDROCARBON CONCENTRATIONS VS. TIME**

Crescent Shell
890 L Street
Crescent City, California 95531

| Project No. | Date |
|---|---|
| SP-165 | 9/10/2005 |

Figure 5



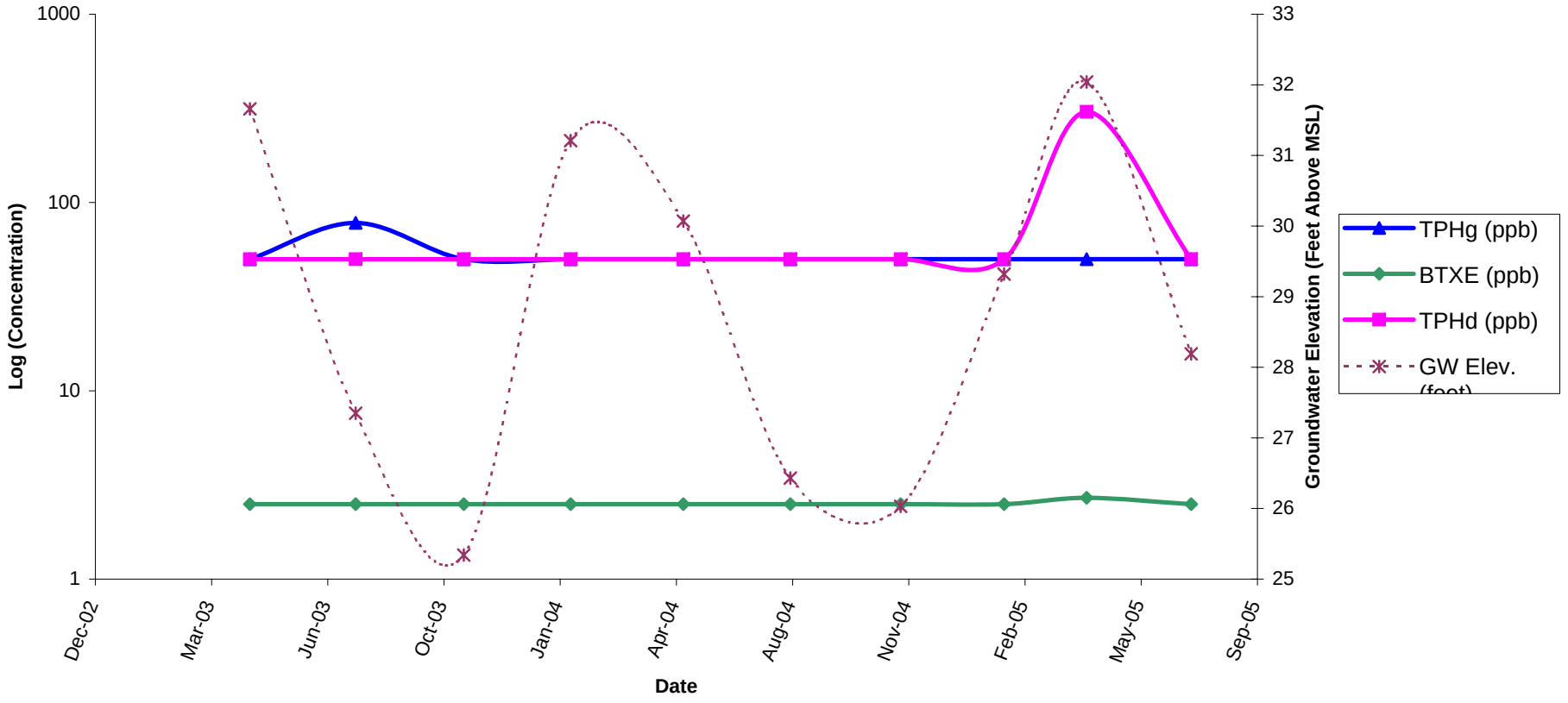

SunPacific Environmental Services
(707) 269-0884

# MW-2 HYDROCARBON CONCENTRATIONS VS. TIME

Crescent Shell
890 L Street
Crescent City, California 95531

| Project No. | Date |
|---|---|
| SP-165 | 9/10/2005 |

Figure 6



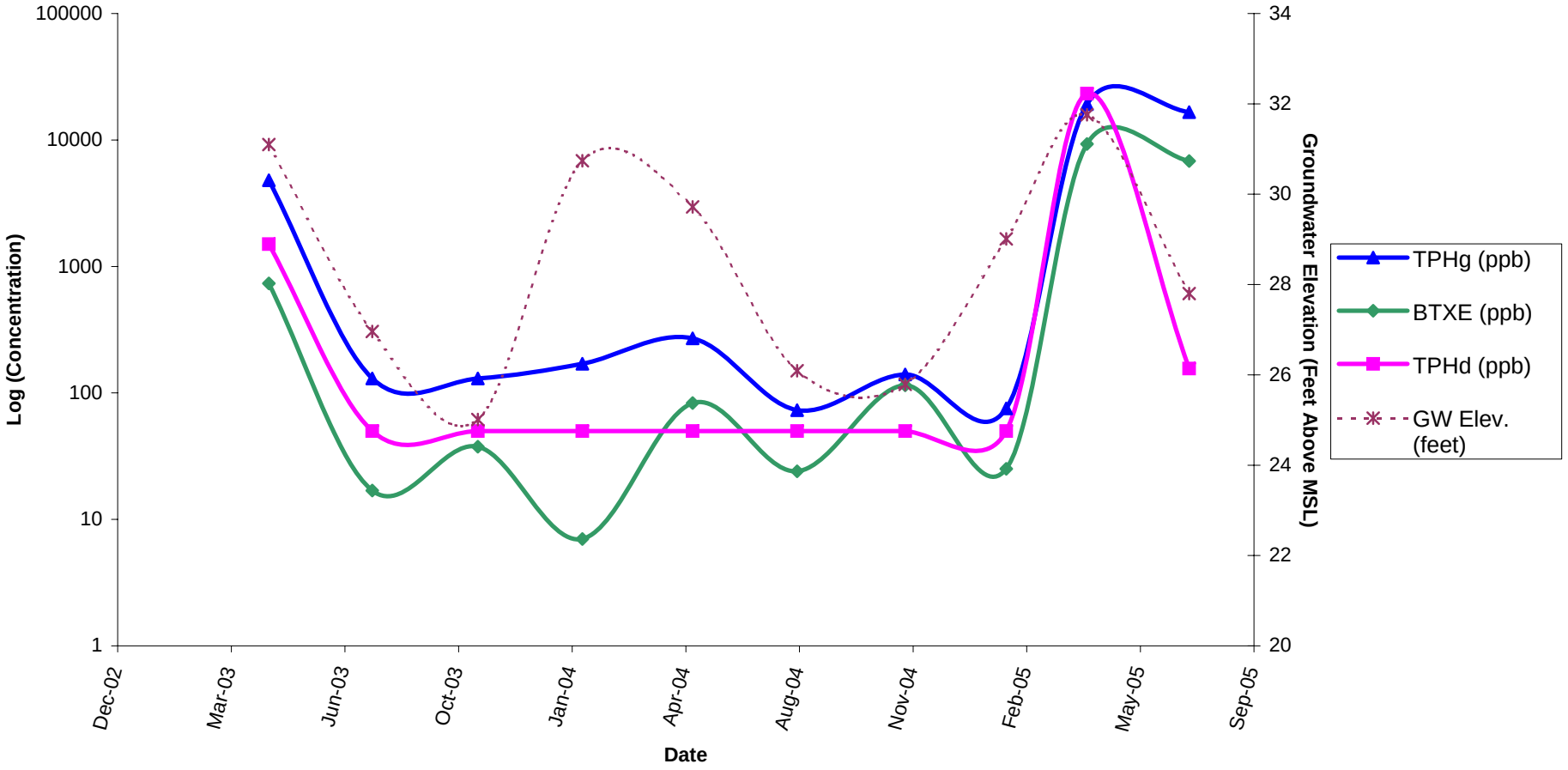

SunPacific Environmental Services
(707) 269-0884

# MW-4 HYDROCARBON CONCENTRATIONS VS. TIME

Figure 7

Crescent Shell
890 L Street
Crescent City, California 95531

| Project No. | Date |
|---|---|
| SP-165 | 9/10/2005 |



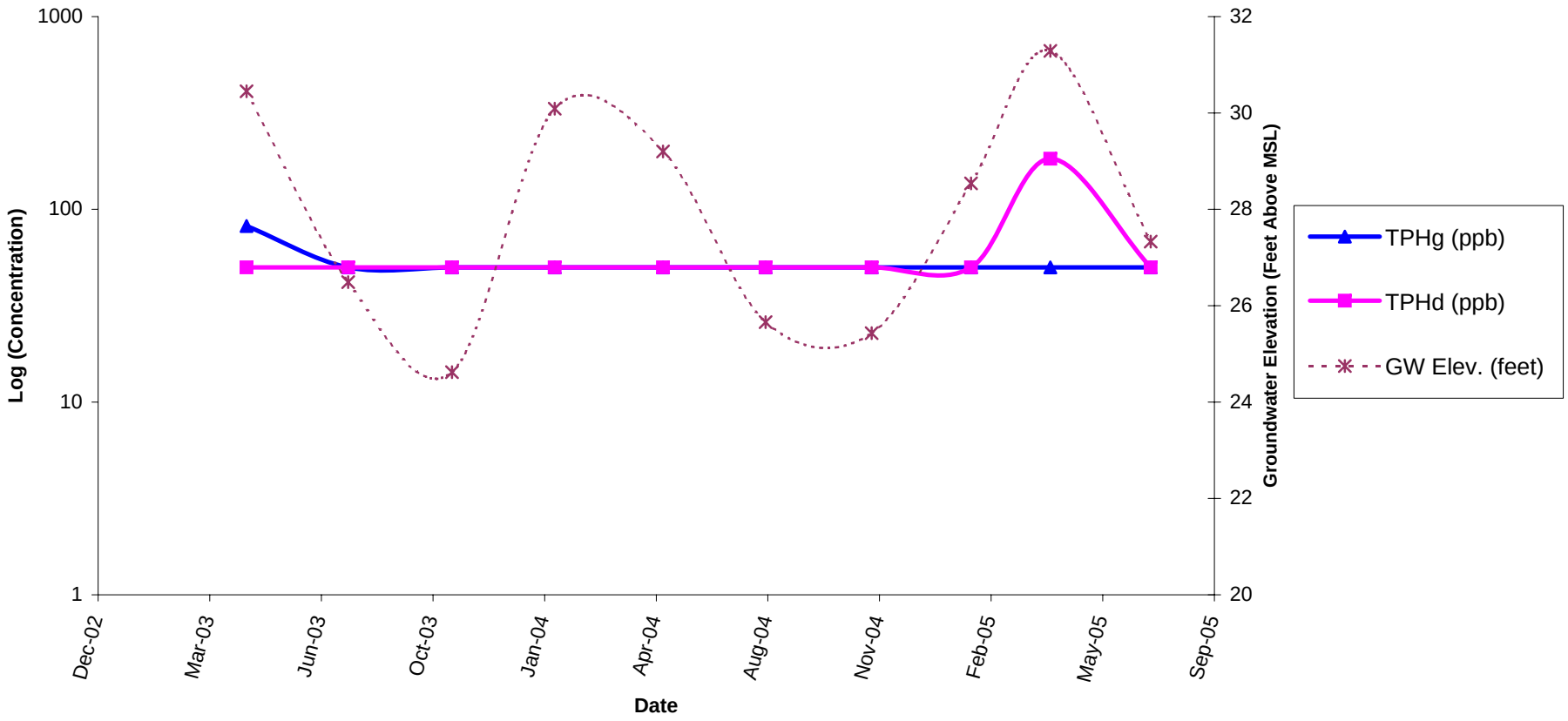

SunPacific Environmental Services
(707) 269-0884

**MW-5 HYDROCARBON CONCENTRATIONS VS. TIME**

Crescent Shell
890 L Street
Crescent City, California 95531

| Project No. | Date |
|---|---|
| SP-165 | 9/10/2005 |

Figure 8



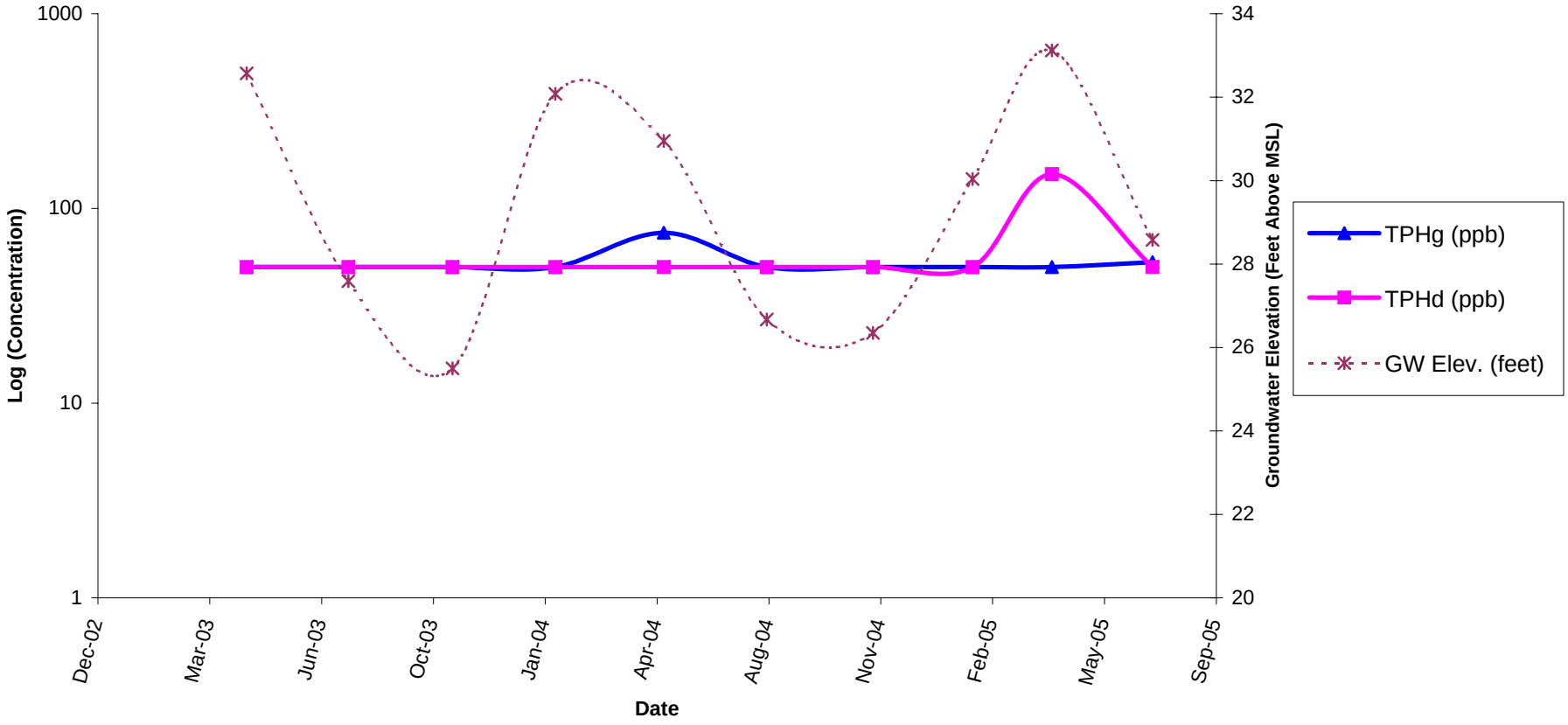

SunPacific Environmental Services
(707) 269-0884

**MW-6 HYDROCARBON CONCENTRATIONS VS. TIME**

Crescent Shell
890 L Street
Crescent City, California 95531

| Project No. | Date |
|---|---|
| SP-165 | 9/10/2005 |

Figure 9




SunPacific Environmental Services
(707) 269-0884

**MW-7 HYDROCARBON CONCENTRATIONS VS. TIME**

Crescent Shell
890 L Street
Crescent City, California 95531

| Project No. | Date |
|---|---|
| SP-165 | 9/10/2005 |

Figure

10

# Appendices

# Appendix A

August 02, 2005

**Lab ID: 5070595**

Tien-yu Tai
SOUNPACIFIC
4612 GREENWOOD HEIGHTS DR
KNEELAND, CA 95549
RE: CRESCENT SHELL SP-165

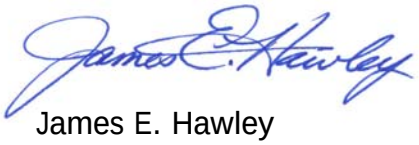
Dear Tien-yu Tai,

Enclosed are the analysis results for Work Order number 5070595. All analysis were performed under strict adherence to our established Quality Assurance Plan. Any abnormalities are listed in the qualifier section of this report.

If you have any questions regarding these results, please feel free to contact us at any time. We appreciate the opportunity to service your environmental testing needs.

Sincerely,

For



James E. Hawley
Laboratory Director
California ELAP Certification Number 1677

| | | | |
|---|---|---|---|
| **Report To:** | SOUNPACIFIC | **Lab No:** | 5070595 |
| | 4612 GREENWOOD HEIGHTS DR | **Reported:** | 08/02/05 |
| | KNEELAND, CA 95549 | **Phone:** | 707-269-0884 |
| **Attention:** | Tien-yu Tai | **P.O. #** | |
| **Project:** | CRESCENT SHELL SP-165 | | |
| **Description:** | MW-1 **Lab ID:** 5070595-01 | **Sampled:** | 07/10/05 00:00 |
| **Matrix:** | Water | **Received:** | 07/18/05 11:48 |

## Volatile Organic Compounds

| Analyte | Units | Results | Qualifier | MDL | RL | Method | Analyzed | Prepared | Batch |
|---|---|---|---|---|---|---|---|---|---|
| **Gasoline** | ug/l | **22200** | | | 2500 | EPA 8015/8260 | 07/18/05 | 07/18/05 | B5G0502 |
| **Benzene** | " | **34.0** | | | 25.0 | " | " | " | " |
| **Toluene** | " | **2220** | | | 25.0 | " | " | " | " |
| **Ethylbenzene** | " | **2180** | | | 25.0 | " | " | " | " |
| **Xylenes (total)** | " | **4560** | | | 50.0 | " | " | " | " |
| Methyl tert-butyl ether | " | ND | | | 50.0 | " | " | " | " |
| Di-isopropyl ether | " | ND | | | 25.0 | " | " | " | " |
| Tert-amyl methyl ether | " | ND | | | 25.0 | " | " | " | " |
| Ethyl tert-butyl ether | " | ND | | | 25.0 | " | " | " | " |
| Tert-butyl alcohol | " | ND | | | 2500 | " | " | " | " |
| *Surrogate: 4-Bromofluorobenzene* | | *100 %* | | *43-155* | | *"* | *"* | *"* | *"* |

## TPH Diesel & Motor Oil

| Analyte | Units | Results | Qualifier | MDL | RL | Method | Analyzed | Prepared | Batch |
|---|---|---|---|---|---|---|---|---|---|
| **Diesel** | ug/l | **16100** | D-01, I-03 | | 500 | EPA 8015 MOD | 07/28/05 | 07/22/05 | B5G0431 |
| **Motor Oil** | " | **2690** | D-10, I-03 | | 500 | " | " | " | " |
| *Surrogate: Octacosane* | | *94.0 %* | *I-03* | *50-150* | | *"* | *"* | *"* | *"* |

Approved By

Basic Laboratory, Inc.

California D.O.H.S. Cert #1677

| | | | |
|---|---|---|---|
| **Report To:** | SOUNPACIFIC | **Lab No:** | 5070595 |
| | 4612 GREENWOOD HEIGHTS DR | **Reported:** | 08/02/05 |
| | KNEELAND, CA 95549 | **Phone:** | 707-269-0884 |
| **Attention:** | Tien-yu Tai | **P.O. #** | |
| **Project:** | CRESCENT SHELL SP-165 | | |
| **Description:** | MW-2 **Lab ID:** 5070595-02 | **Sampled:** | 07/10/05 00:00 |
| **Matrix:** | Water | **Received:** | 07/18/05 11:48 |

## Volatile Organic Compounds

| Analyte | Units | Results | Qualifier | MDL | RL | Method | Analyzed | Prepared | Batch |
|---|---|---|---|---|---|---|---|---|---|
| **Gasoline** | ug/l | **1670** | | | 50.0 | EPA 8015/8260 | 07/18/05 | 07/18/05 | B5G0502 |
| **Benzene** | " | **3.3** | | | 0.5 | " | 07/18/05 | " | " |
| **Toluene** | " | **63.2** | | | 0.5 | " | " | " | " |
| **Ethylbenzene** | " | **29.3** | | | 0.5 | " | " | " | " |
| **Xylenes (total)** | " | **159** | | | 1.0 | " | " | " | " |
| Methyl tert-butyl ether | " | ND | | | 1.0 | " | 07/18/05 | " | " |
| Di-isopropyl ether | " | ND | | | 0.5 | " | " | " | " |
| Tert-amyl methyl ether | " | ND | | | 0.5 | " | 07/18/05 | " | " |
| Ethyl tert-butyl ether | " | ND | | | 0.5 | " | 07/18/05 | " | " |
| Tert-butyl alcohol | " | ND | | | 50.0 | " | " | " | " |
| *Surrogate: 4-Bromofluorobenzene* | | *102 %* | | *43-155* | | *"* | *07/18/05* | *"* | *"* |

## TPH Diesel & Motor Oil

| Analyte | Units | Results | Qualifier | MDL | RL | Method | Analyzed | Prepared | Batch |
|---|---|---|---|---|---|---|---|---|---|
| **Diesel** | ug/l | **31300** | I-03 | | 500 | EPA 8015 MOD | 07/28/05 | 07/22/05 | B5G0431 |
| **Motor Oil** | " | **7150** | D-10, I-03 | | 500 | " | " | " | " |
| *Surrogate: Octacosane* | | *101 %* | *I-03* | *50-150* | | *"* | *"* | *"* | *"* |

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| | | | |
|---|---|---|---|
| **Report To:** | SOUNPACIFIC | **Lab No:** | 5070595 |
| | 4612 GREENWOOD HEIGHTS DR | **Reported:** | 08/02/05 |
| | KNEELAND, CA 95549 | **Phone:** | 707-269-0884 |
| **Attention:** | Tien-yu Tai | **P.O. #** | |
| **Project:** | CRESCENT SHELL SP-165 | | |
| **Description:** | MW-4 **Lab ID:** 5070595-03 | **Sampled:** | 07/10/05 00:00 |
| **Matrix:** | Water | **Received:** | 07/18/05 11:48 |

## Volatile Organic Compounds

| Analyte | Units | Results | Qualifier | MDL | RL | Method | Analyzed | Prepared | Batch |
|---|---|---|---|---|---|---|---|---|---|
| Gasoline | ug/l | ND | | | 50.0 | EPA 8015/8260 | 07/18/05 | 07/18/05 | B5G0502 |
| Benzene | " | ND | | | 0.5 | " | " | " | " |
| Toluene | " | ND | | | 0.5 | " | " | " | " |
| Ethylbenzene | " | ND | | | 0.5 | " | " | " | " |
| Xylenes (total) | " | ND | | | 1.0 | " | " | " | " |
| Methyl tert-butyl ether | " | ND | | | 1.0 | " | " | " | " |
| Di-isopropyl ether | " | ND | | | 0.5 | " | " | " | " |
| Tert-amyl methyl ether | " | ND | | | 0.5 | " | " | " | " |
| Ethyl tert-butyl ether | " | ND | | | 0.5 | " | " | " | " |
| Tert-butyl alcohol | " | ND | | | 50.0 | " | " | " | " |
| *Surrogate: 4-Bromofluorobenzene* | | *97.8 %* | | *43-155* | | *"* | *"* | *"* | *"* |

## TPH Diesel & Motor Oil

| Analyte | Units | Results | Qualifier | MDL | RL | Method | Analyzed | Prepared | Batch |
|---|---|---|---|---|---|---|---|---|---|
| Diesel | ug/l | ND | I-03 | | 50 | EPA 8015 MOD | 07/27/05 | 07/22/05 | B5G0431 |
| Motor Oil | " | ND | I-03 | | 50 | " | " | " | " |
| *Surrogate: Octacosane* | | *95.9 %* | *I-03* | *50-150* | | *"* | *"* | *"* | *"* |

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California D.O.H.S. Cert #1677

| | | | |
|---|---|---|---|
| **Report To:** | SOUNPACIFIC | **Lab No:** | 5070595 |
| | 4612 GREENWOOD HEIGHTS DR | **Reported:** | 08/02/05 |
| | KNEELAND, CA 95549 | **Phone:** | 707-269-0884 |
| **Attention:** | Tien-yu Tai | **P.O. #** | |
| **Project:** | CRESCENT SHELL SP-165 | | |
| **Description:** | MW-5 **Lab ID:** 5070595-04 | **Sampled:** | 07/10/05 00:00 |
| **Matrix:** | Water | **Received:** | 07/18/05 11:48 |

## Volatile Organic Compounds

| Analyte | Units | Results | Qualifier | MDL | RL | Method | Analyzed | Prepared | Batch |
|---|---|---|---|---|---|---|---|---|---|
| **Gasoline** | ug/l | **16600** | | | 2500 | EPA 8015/8260 | 07/18/05 | 07/18/05 | B5G0502 |
| **Benzene** | " | **68.0** | | | 25.0 | " | " | " | " |
| **Toluene** | " | **2120** | | | 25.0 | " | " | " | " |
| **Ethylbenzene** | " | **655** | | | 25.0 | " | " | " | " |
| **Xylenes (total)** | " | **3970** | | | 50.0 | " | " | " | " |
| Methyl tert-butyl ether | " | ND | | | 50.0 | " | " | " | " |
| Di-isopropyl ether | " | ND | | | 25.0 | " | " | " | " |
| Tert-amyl methyl ether | " | ND | | | 25.0 | " | " | " | " |
| Ethyl tert-butyl ether | " | ND | | | 25.0 | " | " | " | " |
| Tert-butyl alcohol | " | ND | | | 2500 | " | " | " | " |
| *Surrogate: 4-Bromofluorobenzene* | | *96.0 %* | | *43-155* | | *"* | *"* | *"* | *"* |

## TPH Diesel & Motor Oil

| Analyte | Units | Results | Qualifier | MDL | RL | Method | Analyzed | Prepared | Batch |
|---|---|---|---|---|---|---|---|---|---|
| **Diesel** | ug/l | **156** | I-03 | | 50 | EPA 8015 MOD | 07/28/05 | 07/22/05 | B5G0431 |
| Motor Oil | " | ND | I-03 | | 50 | " | " | " | " |
| *Surrogate: Octacosane* | | *97.8 %* | *I-03* | *50-150* | | *"* | *"* | *"* | *"* |

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| | | | |
|---|---|---|---|
| **Report To:** | SOUNPACIFIC | **Lab No:** | 5070595 |
| | 4612 GREENWOOD HEIGHTS DR | **Reported:** | 08/02/05 |
| | KNEELAND, CA 95549 | **Phone:** | 707-269-0884 |
| **Attention:** | Tien-yu Tai | **P.O. #** | |
| **Project:** | CRESCENT SHELL SP-165 | | |
| **Description:** | MW-6 **Lab ID:** 5070595-05 | **Sampled:** | 07/10/05 00:00 |
| **Matrix:** | Water | **Received:** | 07/18/05 11:48 |

## Volatile Organic Compounds

| Analyte | Units | Results | Qualifier | MDL | RL | Method | Analyzed | Prepared | Batch |
|---|---|---|---|---|---|---|---|---|---|
| Gasoline | ug/l | ND | | | 50.0 | EPA 8015/8260 | 07/18/05 | 07/18/05 | B5G0502 |
| Benzene | " | ND | | | 0.5 | " | " | " | " |
| Toluene | " | ND | | | 0.5 | " | " | " | " |
| Ethylbenzene | " | ND | | | 0.5 | " | " | " | " |
| Xylenes (total) | " | ND | | | 1.0 | " | " | " | " |
| Methyl tert-butyl ether | " | ND | | | 1.0 | " | " | " | " |
| Di-isopropyl ether | " | ND | | | 0.5 | " | " | " | " |
| Tert-amyl methyl ether | " | ND | | | 0.5 | " | " | " | " |
| Ethyl tert-butyl ether | " | ND | | | 0.5 | " | " | " | " |
| Tert-butyl alcohol | " | ND | | | 50.0 | " | " | " | " |
| *Surrogate: 4-Bromofluorobenzene* | | *94.0 %* | | *43-155* | | *"* | *"* | *"* | *"* |

## TPH Diesel & Motor Oil

| Analyte | Units | Results | Qualifier | MDL | RL | Method | Analyzed | Prepared | Batch |
|---|---|---|---|---|---|---|---|---|---|
| Diesel | ug/l | ND | I-03 | | 50 | EPA 8015 MOD | 07/28/05 | 07/22/05 | B5G0431 |
| Motor Oil | " | ND | I-03 | | 50 | " | " | " | " |
| *Surrogate: Octacosane* | | *104 %* | *I-03* | *50-150* | | *"* | *"* | *"* | *"* |

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| | | | |
|---|---|---|---|
| **Report To:** | SOUNPACIFIC | **Lab No:** | 5070595 |
| | 4612 GREENWOOD HEIGHTS DR | **Reported:** | 08/02/05 |
| | KNEELAND, CA 95549 | **Phone:** | 707-269-0884 |
| **Attention:** | Tien-yu Tai | **P.O. #** | |
| **Project:** | CRESCENT SHELL SP-165 | | |
| **Description:** | MW-7 **Lab ID:** 5070595-06 | **Sampled:** | 07/10/05 00:00 |
| **Matrix:** | Water | **Received:** | 07/18/05 11:48 |

## Volatile Organic Compounds

| Analyte | Units | Results | Qualifier | MDL | RL | Method | Analyzed | Prepared | Batch |
|---|---|---|---|---|---|---|---|---|---|
| **Gasoline** | ug/l | **53.2** | | | 50.0 | EPA 8015/8260 | 07/18/05 | 07/18/05 | B5G0502 |
| Benzene | " | ND | | | 0.5 | " | " | " | " |
| Toluene | " | ND | | | 0.5 | " | " | " | " |
| Ethylbenzene | " | ND | | | 0.5 | " | " | " | " |
| Xylenes (total) | " | ND | | | 1.0 | " | " | " | " |
| Methyl tert-butyl ether | " | ND | | | 1.0 | " | " | " | " |
| Di-isopropyl ether | " | ND | | | 0.5 | " | " | " | " |
| Tert-amyl methyl ether | " | ND | | | 0.5 | " | " | " | " |
| Ethyl tert-butyl ether | " | ND | | | 0.5 | " | " | " | " |
| Tert-butyl alcohol | " | ND | | | 50.0 | " | " | " | " |
| *Surrogate: 4-Bromofluorobenzene* | | *94.0 %* | | *43-155* | | *"* | *"* | *"* | *"* |

## TPH Diesel & Motor Oil

| Analyte | Units | Results | Qualifier | MDL | RL | Method | Analyzed | Prepared | Batch |
|---|---|---|---|---|---|---|---|---|---|
| Diesel | ug/l | ND | I-03 | | 50 | EPA 8015 MOD | 07/28/05 | 07/22/05 | B5G0431 |
| Motor Oil | " | ND | I-03 | | 50 | " | " | " | " |
| *Surrogate: Octacosane* | | *101 %* | *I-03* | *50-150* | | *"* | *"* | *"* | *"* |

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California D.O.H.S. Cert #1677

| | | | |
|---|---|---|---|
| **Report To:** | SOUNPACIFIC | **Lab No:** | 5070595 |
| | 4612 GREENWOOD HEIGHTS DR | **Reported:** | 08/02/05 |
| | KNEELAND, CA 95549 | **Phone:** | 707-269-0884 |
| **Attention:** | Tien-yu Tai | **P.O. #** | |
| **Project:** | CRESCENT SHELL SP-165 | | |
| **Description:** | MW-8 **Lab ID:** 5070595-07 | **Sampled:** | 07/10/05 00:00 |
| **Matrix:** | Water | **Received:** | 07/18/05 11:48 |

## Volatile Organic Compounds

| Analyte | Units | Results | Qualifier | MDL | RL | Method | Analyzed | Prepared | Batch |
|---|---|---|---|---|---|---|---|---|---|
| **Gasoline** | ug/l | **16800** | | | 1250 | EPA 8015/8260 | 07/18/05 | 07/18/05 | B5G0502 |
| **Benzene** | " | **1540** | | | 12.5 | " | " | " | " |
| **Toluene** | " | **47.5** | | | 12.5 | " | " | " | " |
| **Ethylbenzene** | " | **1990** | | | 25.0 | " | " | " | " |
| **Xylenes (total)** | " | **2420** | | | 25.0 | " | " | " | " |
| Methyl tert-butyl ether | " | ND | | | 25.0 | " | " | " | " |
| Di-isopropyl ether | " | ND | | | 12.5 | " | " | " | " |
| **Tert-amyl methyl ether** | " | **38.8** | | | 12.5 | " | " | " | " |
| Ethyl tert-butyl ether | " | ND | | | 12.5 | " | " | " | " |
| Tert-butyl alcohol | " | ND | | | 1250 | " | " | " | " |
| *Surrogate: 4-Bromofluorobenzene* | | *98.6 %* | | *43-155* | | *"* | *07/18/05* | *"* | *"* |

## TPH Diesel & Motor Oil

| Analyte | Units | Results | Qualifier | MDL | RL | Method | Analyzed | Prepared | Batch |
|---|---|---|---|---|---|---|---|---|---|
| **Diesel** | ug/l | **2950** | D-01, D-02, I-03 | | 50 | EPA 8015 MOD | 07/28/05 | 07/22/05 | B5G0431 |
| Motor Oil | " | ND | I-03 | | 50 | " | " | " | " |
| *Surrogate: Octacosane* | | *104 %* | *I-03* | *50-150* | | *"* | *"* | *"* | *"* |

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Basic Laboratory, Inc.

California D.O.H.S. Cert #1677

| | | | |
|---|---|---|---|
| **Report To:** | SOUNPACIFIC | **Lab No:** | 5070595 |
| | 4612 GREENWOOD HEIGHTS DR | **Reported:** | 08/02/05 |
| | KNEELAND, CA 95549 | **Phone:** | 707-269-0884 |
| **Attention:** | Tien-yu Tai | **P.O. #** | |
| **Project:** | CRESCENT SHELL SP-165 | | |

## Notes and Definitions

| | |
|---|---|
| D-01 | This sample appears to contain volatile range organics. |
| D-02 | Hydrocarbon pattern present in the requested fuel quantitation range but does not resemble the pattern of the requested fuel. |
| D-10 | The heavy oil range organics present are due to hydrocarbons eluting primarily in the diesel range. |
| I-03 | Sample was received past the EPA recommended holding time. |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the detection limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| RPD | Relative Percent Difference |
| < | Less than reporting limit |
| ≤ | Less than or equal to reporting limit |
| > | Greater than reporting limit |
| ≥ | Greater than or equal to reporting limit |
| MDL | Method Detection Limit |
| RL/ML | Minimum Level of Quantitation |
| MCL/AL | Maxium Contaminant Level/Action Level |
| mg/kg | Results reported as wet weight |
| TTLC | Total Threshold Limit Concentration |
| STLC | Soluble Threshold Limit Concentration |
| TCLP | Toxicity Characteristic Leachate Procedure |

Approved By

Basic Laboratory, Inc.

California D.O.H.S. Cert #1677

# BASIC LABORATORY CHAIN OF CUSTODY RECORD

2218 Railroad Ave., Redding, CA 96001 (530) 243-7234 FAX (530) 243-7494

LAB #: 5070595

CLIENT NAME: Soun Pacific

PROJECT NAME: Crescent Shell

PROJECT #: SP-165

SAMPLE TYPE: Water

ADDRESS: PO Box 13, Kneeland, CA 95549

REQUESTED COMP. DATE: 8-1-05

STATE FORMS? ☐

# OF SAMPLES: 7

TURN AROUND TIME: STD ☒ RUSH ☐

PAGE 1 OF 1

PROJECT MANAGER: Tien-Yu Twi

PHONE: (707) 269-0884 FAX: 707 269-0649 E-MAIL: tien@Sounpacific

INVOICE TO: Soun Pacific PO#:

SPECIAL MAIL ☐ E-MAIL ☒ FAX ☐ EDT ☒

13th quarter Sampling Event

| DATE | TIME | WATER | COMP | SOIL | SAMPLE DESCRIPTION | # OF BOTTLES | ANALYSIS REQUESTED: TPHg, TPHd, MO BTEX, 5-oxys | LAB ID | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| 7-10-05 | | X | | | MW-1 | 5 | X X | -1 | |
| | | | | | MW-2 | | | -2 | |
| | | | | | MW-4 | | | -3 | |
| | | | | | MW-5 | | | -4 | |
| | | | | | MW-6 | | | -5 | |
| | | | | | MW-7 | | | -6 | |
| | | | | | MW-8 | | | -7 | |
| | | | | | T0600150049 | | | | |

REP: ID#: SYSTEM#: GLOBAL ID #: QC = 1 2 3 4

PRESERVED WITH: $HNO_3$ ☐ $H_2SO_4$ ☐ NaOH ☐ ZnAce/NaOH ☐ HCL ☒ NaThio ☐ OTHER ICE

| | | | |
|---|---|---|---|
| SAMPLED BY: Tien-Yu-Twi | DATE/TIME: 7/10/05 | RELINQUISHED BY: | DATE/TIME: 7/14/05 |
| RECEIVED BY: | DATE/TIME: | RELINQUISHED BY: | DATE/TIME: |
| RECEIVED BY: (SAMPLES UNVERIFIED) | DATE/TIME: | RELINQUISHED BY: | DATE/TIME: |
| RECEIVED BY LAB: (VERIFIED) | DATE/TIME: 7/18/05 @1148 | SAMPLES SHIPPED VIA: UPS FEDEX POST BUS OTHER | |

INSTRUCTIONS, TERMS AND CONDITIONS ON BACK.

# Appendix B

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# Standard Operating Procedures

## Groundwater Level Measurements and Free Phase Hydrocarbon Measurements

All SounPacific staff and contractors shall adopt the following procedures any time that groundwater elevations are determined for the purposes of establishing groundwater gradient and direction, and prior to any sampling event.

Wells are to be tested for free phase hydrocarbons (free product) before the first development or sampling of any new well, and in any well that has historically contained free product.

### Equipment Checklist

- ❑ Combination water level / free phase hydrocarbon indicator probe (probe)
- ❑ Gauging Data / Purge Calculations Sheet
- ❑ Pencil or Pen/sharpie
- ❑ Disposable Gloves
- ❑ Distilled Water and or know water source on site that is clean
- ❑ Alconox (powder) or Liquinox (liquid) non-phosphate cleaners—do not use soap!
- ❑ Buckets or Tubs for decontamination station
- ❑ Tools necessary to access wells
- ❑ Site Safety Plan
- ❑ This Standard Operating Procedure
- ❑ Notify Job site business that you will be arriving to conduct work.

### Procedure

1. Review Site Safety Plan and utilize personal protection appropriate for the contaminants that may be encountered.

2. Access and open all monitoring wells to be measured. Allow wells to equilibrate for approximately 15 minutes before taking any measurements.

3. Decontaminate probe with Alconox or Liquinox solution, and rinse with distilled water.

4. Determine the diameter of the well to be measured and indicate this on the Gauging Data / Purge Calculations Sheet.

5. Words of caution: Please be careful with water level and product meters probes are not attached with high strength material so please make sure to avoid catching the end on anything in the well and make sure not to wind reel to the point that it could pull on the probe. ***If product is suspect in a well, go to step 6, if no product is suspected go to step 7 below.***

6. **When product is present or suspected:** use the product level meter. Clip the static charge clamp to the side of the well casing. Then lower probe into the well through the product/water interface about one foot if possible. Then slowly raise the probe back up through the product/water interface layer and record the level as the tone changes from solid to broken-record this level in the Gauging Data / Purge Calculations Sheet to the nearest 0.01 foot (DTP). Continue to raise the probe up through the product until the tone stops completely-record this level on the Gauging Data / Purge Calculations Sheet to the nearest 0.01 foot (DTW). Then go to step 8.

7. **When no product is present or suspected:** If no free product is present, record the depth of the water (to the nearest 0.01 foot) relative to the painted black mark on the top of the well casing. Leave the probe in the well just a hair above the water level to ensure the well as equilibrated. As the well rises, the tone will sound. Make sure no increase in water levels have occurred in over a ten-minute period. Water levels can lower as well as rise. Make sure you note when the level you keep lowering the probe to has remained stable for at least ten minutes. Once this has been accomplished, please record this level in the Gauging Data / Purge Calculations Sheet to the nearest 0.01 foot (DTW).

8. Turn off the probe, and use the probe to determine the depth to the bottom of the well relative to the top of the well casing. This is the depth to bottom measurement (DTB).

9. Decontaminate probe and tape by washing in an Alconox/Liquinox solution ***(read directions on solution for ratio of water to cleanser)*** and use the toothbrush provided to remove any foreign substance from the probe and tape. Then triple rinse probe and tape with clean water and then proceed to take measurements in the next well.

10. If sampling is to occur, proceed to implement SounPacific's Standard Operating Procedure for Monitoring Well Purging and Sampling. If no sampling is to be performed, close and secure all wells and caps.

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# Standard Operating Procedures

## Monitoring Well Purging and Groundwater Sampling

All SounPacific employees and contractors shall adopt the following procedures any time that groundwater samples are to be taken from an existing groundwater monitoring well.

Prior to the implementation of these procedures, the groundwater level **MUST** be measured and the presence of free phase hydrocarbons determined in accordance with SounPacific's Standard Operating Procedures for Groundwater Level Measurements and Free Phase Hydrocarbon Measurements.

### Equipment Checklist

- ❑ **Gauging Data / Purge Calculations Sheet used for water level determination**
- ❑ Chain of Custody Form
- ❑ pH/ Conductivity / Temperature meter
- ❑ Pencil or Pen
- ❑ Indelible Marker
- ❑ Calculator
- ❑ Disposable Gloves
- ❑ Distilled Water
- ❑ Alconox/liquinox liquid or powdered non-phosphate cleaner
- ❑ Buckets or Tubs for decontamination station
- ❑ Bottom-filling bailer or pumping device for purging
- ❑ Disposable bottom-filling bailer and emptying device for sampling
- ❑ String, twine or fishing line for bailers
- ❑ Sample containers appropriate for intended analytical method (check with lab)
- ❑ Sample labels
- ❑ Site Safety Plan
- ❑ Tools necessary to access wells
- ❑ Drum space on site adequate for sampling event

## Procedure

1. Review Site Safety Plan and utilize personal protection appropriate for the contaminants that may be encountered.

2. Measure groundwater levels and check for the presence of free product in accordance with the Standard Operating Procedures for Groundwater Level Measurements and Free Phase Hydrocarbon Measurements.

## Purging

3. Calculate and record the volume of standing water in each well using the information provided on the Gauging Data / Purge Calculations sheet.
   (DTB-DTW) x Conversion Factor = Casing Volume.

4. The purge volume shall be at least three times and no more than seven times the volume of standing water (the casing volume).

5. Purge the well by bailing or pumping water from the well into a calibrated receptacle, such as a five gallon bucket or tub with markings to indicate one gallon increments. Collect purgeate in a 55 gallon labeled drum and store on site. Drum labels should include the date, contents, site number, and SounPacific's name and telephone number.

6. Take measurements of pH, conductivity, temperature, and visual observations to verify the stabilization of these parameters. At least five measurements of these parameters should be made throughout the purging process. The parameters shall be considered stabilized if successive measurements vary by less than 0.25 pH units, 10% of conductivity in μS, and 1°C (or 1.8°F). Continue purging until at least three times the casing volume has been removed, and the measured parameters have stabilized as indicated above. Do not exceed seven casing volumes.

7. Take a final depth to groundwater measurement and calculate the casing volume of the recharged well. Ideally, the casing volume should have recharged to at least 80% of the original measured casing volume before sampling commences. If due to slow recharge rates it is not feasible to wait for the well to fully recharge, then note this on the Gauging Data / Purge Calculation Sheet and proceed to sample following the procedure below.

## Sampling

8. **After completing groundwater measurement, and checking for free product if necessary, in accordance with SounPacific's Standard Operating Procedures for Groundwater Level Measurements and Free Phase Hydrocarbon Measurements, and after purging monitoring wells as described above, groundwater samples may be collected.**

9. Slowly lower a clean, previously unused disposable bailer into the well water approximately half of the bailer length, and allow the bailer to slowly fill.

10. Withdraw the full bailer from the monitoring well and utilize the included (clean and unused) bottom-emptying device to fill the necessary sample containers, and seal the container with the included PTFE (Teflon) lined cap.

11. When filling VOAs, fill the VOA completely full, with the meniscus rising above the rim of the bottle. Carefully cap the VOA and invert it and gently tap it to determine whether air bubbles are trapped inside. If the VOA contains air bubbles, refill the VOA and repeat this step.

12. All samples shall be labeled with the Sample ID, the Sample Date, and the Sample Location or Project Number. Use an indelible marker for writing on sample labels.

13. Record all pertinent sample data on the Chain of Custody.

14. Place samples in an ice chest cooled to 4°C with ice or "blue ice". Bottles should be wrapped in bubble wrap, and VOA's should be inserted in a foam VOA holder to protect against breakage. Samples are to be kept at 4°C until delivered to the laboratory. Any transference of sample custody shall be indicated on the Chain of Custody with the appropriate signatures as necessary.

15. Utilize clean, previously unused gloves, bailer and line, and bottom-emptying device for each well sampled.

16. When finished with all sampling, close and secure all monitoring wells.

17. Leave the site cleaner than when you arrived and drive safely.

# Appendix C

## GAUGING DATA/PURGE CALCULATIONS

Job Site: Crescent Shell  Job No.: SP-165

Event: 13th Quarterly  Date: 7-10-05

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| WELL NO. | DIA. (in.) | DTB (ft.) | DTW (ft.) | ST (ft.) | CV (gal.) | PV (gal.) | SPL (ft.) | Bailer Loads | Notes |
|---|---|---|---|---|---|---|---|---|---|
| MW-1 | 2 | 13.4 | 8.05 | 5.4 | 0.86 | 2.6 | | | Very strong smell of oil |
| MW-2 | 2 | 13.72 | 9.57 | 4.15 | 0.66 | 1.98 | | | Very strong smell of oil |
| MW-4 | 2 | 18.95 | 8.67 | 10.28 | 1.64 | 4.9 | | | |
| MW-5 | 2 | 18.87 | 9.47 | 9.4 | 1.5 | 4.5 | | | |
| MW-6 | 2 | 18.64 | 10.47 | 8.17 | 1.31 | 393 | | | |
| MW-7 | 2 | 18.45 | 8.3 | 10.15 | 1.62 | 4.86 | | | |
| MW-8 | 2 | 14.22 | 10.92 | 3.3 | 0.53 | 1.59 | | | Colorful bubbles while purging |
| | | | | | | | | | |

Explanation:
DIA = Well Diameter
DTB = Depth to Bottom
DTW = Depth to Water
ST = Saturated Thickness (DTB-DTW)
CV = Casing Volume (ST x cf)
PV = Purge Volume (standard 3 x CV, well development 10 x CV)
SPL = Thickness of Separate Phase Liquid

Conversion Factors (cf):
2 in. dia. well cf = 0.16 gal./ft.
4 in. dia. well cf = 0.65 gal./ft.
6 in. dia. well cf = 1.44 gal./ft.

Sampler: Tien-yu Tai

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# Well Gauging/Sampling Report

Sheet 1 of 7

Date: 7-10-05 Project Name: Crescent Shell Project No: 9-165 Well Number: MW-1

Analyses Tested: TPHg, TPHd, TPHmo, BTXE, 5 Oxys.

Sample Containers: 3 Hil VOAs, 2 1-L Amber Glass Bottle

Purge Technique: ☐ Bailer ☒ Pump

Sounder Used: ☐ Water Meter ☑ Interface Meter

**Water & Free Product Levels**

| Time | Depth to Water | Depth to Product | Notes: |
|---|---|---|---|
| 12.04 | 8.05 ft | | No Sheen |
| 12.30 | 8.05 | | No sheen |
| ~~End~~ | | | |
| | | | |
| | | | |
| | | | |

**Field Measurements**

| Time | Total Vol. Removed/(gal) | pH | Temp/(F) | Cond./(ms/cm) | DO/(mg/L) | DO/(%) | |
|---|---|---|---|---|---|---|---|
| 3.56 | 0 | 6.89 | 62.40 | 0.537 | 0.21 | 2.2 | |
| 3.59 | 1 | 7.00 | 62.40 | 0.551 | 0.3 | 3.1 | |
| 4.01 | 2 | 7.03 | 63.33 | 0.542 | 0.42 | 4.3 | |
| 4.03 | 3 | 7.01 | 63.12 | 0.603 | 0.34 | 3.5 | |
| | | | | | | | |
| | | | | | | | |

Field Scientist: Tien-yu Tai

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# Well Gauging/Sampling Report

Sheet 2 of 7.

Date: 7-10-05 Project Name: Crescent Shell Project No: SP-165 Well Number: MW-2

Analyses Tested: TPHg, TPHd, TPHmo, BTXE, 5 Oxys.

Sample Containers: 3 HCl Vials, 2 1-L Amber Glass Bottle

Purge Technique: ☐ Bailer ☒ Pump

Sounder Used: ☐ Water Meter ☒ Interface Meter

**Water & Free Product Levels**

| Time | Depth to Water | Depth to Product | Notes: |
|---|---|---|---|
| 12.13 | 9.58 | | No sheen |
| 12.45 | 9.57 | | " |
| | End | | |
| | | | |
| | | | |
| | | | |

**Field Measurements**

| Time | Total Vol. Removed/(gal) | pH | Temp/(F) | Cond./(ms/cm) | DO/(mg/L) | DO/(%) | |
|---|---|---|---|---|---|---|---|
| 3.08 | 0 | 7.08 | 61.83 | 0.248 | 0.23 | 2.3 | |
| 3.12 | 1 | 7.01 | 61.90 | 0.276 | 0.31 | 3.2 | |
| 3.15 | 2 | 6.98 | 61.97 | 0.273 | 0.30 | 3.1 | |
| 3.18 | 3 | 6.96 | 61.94 | 0.272 | 0.32 | 3.2 | |
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Field Scientist: Tien-yu Tai

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# Well Gauging/Sampling Report

Sheet 3 of 7

Date: 7-10-05 Project Name: Crescent Shell Project No: SP-165 Well Number: MW-4

Analyses Tested: TPHg, TPHd, TPHmo, BTXE, 5 Oxyc

Sample Containers: 3 HCl VOAs, 2 1-L Amber Glass, Bottles

Purge Technique: ☐ Bailer ☐ Pump

Sounder Used: ☐ Water Meter ☒ Interface Meter

**Water & Free Product Levels**

| Time | Depth to Water | Depth to Product | Notes: |
|---|---|---|---|
| 12.08 | 8.67 | | Sheen |
| 12.36 | 8.67 | | No Sheen |
| | End | | |
| | | | |
| | | | |
| | | | |

**Field Measurements**

| Time | Total Vol. Removed/(gal) | pH | Temp/(F) | Cond./(ms/cm) | DO/(mg/L) | DO/(%) | |
|---|---|---|---|---|---|---|---|
| 2.16 | 10 | 7.58 | 61.78 | 0.164 | 1.36 | 13.9 | |
| 2.20 | 1.65 | 7.46 | 62.10 | 0.174 | 1.08 | 11.2 | |
| 2.23 | 3.3 | 7.38 | 62.23 | 0.175 | 1.02 | 10.6 | |
| 2.27 | 4.95 | 7.32 | 62.29 | 0.178 | 1.02 | 10.5 | |
| | | | | | | | |
| | | | | | | | |

Field Scientist: Tien-yu Tan

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# Well Gauging/Sampling Report

Sheet 4 of 7

Date: 7-10-05 Project Name: Crescent Shell Project No: SP765 Well Number: MW-5

Analytes Tested: TPHg, TPHd, TPHmo, BTXE, 5 Oxys

Sample Containers: 3 HCl VOAs, 2 1-L Amber Glass Bottles

Purge Technique: ☐ Bailer ☒ Pump

Sounder Used: ☐ Water Meter ☐ Interface Meter

## Water & Free Product Levels

| Time | Depth to Water | Depth to Product | Notes: |
|---|---|---|---|
| 12.12 | 9.47 | | No Sheen |
| 12.38 | 9.47 | | Sheen |
| End | | | |
| | | | |
| | | | |
| | | | |

## Field Measurements

| Time | Total Vol. Removed(gal) | pH | Temp(F) | Cond.(ms/cm) | DO(mg/L) | DO(%) | |
|---|---|---|---|---|---|---|---|
| 2.43 | 0 | 7.39 | 62.27 | 0.181 | 0.70 | 7.2 | |
| 2.48 | 1.5 | 7.29 | 61.18 | 0.179 | 0.63 | 6.5 | |
| 2.51 | 3 | 7.31 | 60.98 | 0.179 | 0.78 | 7.9 | |
| 2.54 | 4.5 | 7.27 | 60.54 | 0.181 | 0.70 | 7.1 | |
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| | | | | | | | |

Field Scientist: Tien-yu Tai

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# Well Gauging/Sampling Report

Sheet 5 of 7

Date: 7-10-05 Project Name: Crescent Shell Project No: SP-165 Well Number: MW-6

Analyses Tested: TPHg, TPHd, TPHmo, BTXE, 5Oxys.

Sample Containers: 3 HCl VOAs, 2 1L Amber Glass Bottles

Purge Technique: ☐ Bailer ☒ Pump

Sounder Used: ☐ Water Meter ☑ Interface Meter

**Water & Free Product Levels**

| Time | Depth to Water | Depth to Product | Notes: |
|---|---|---|---|
| 12:18 | 10.47 ft | | Sheen |
| 12:50 | 10.47 | | " |
| End | | | |
| | | | |
| | | | |
| | | | |

**Field Measurements**

| Time | Total Vol. Removed/(gal) | pH | Temp/(F) | Cond./(ms/cm) | DO/(mg/L) | DO/(%) | |
|---|---|---|---|---|---|---|---|
| 3:32P | 0 | 7.12 | 58.91 | 0.126 | 1.95 | 19.3 | |
| 3:35 | 1.3 | 7.18 | 58.29 | 0.132 | 1.81 | 17.8 | |
| 3:37 | 2.6 | 7.14 | 58.28 | 0.134 | 1.84 | 18.1 | |
| 3:40 | 3.9 | 7.11 | 58.15 | 0.144 | 1.75 | 17.2 | |
| | | | | | | | |
| | | | | | | | |

Field Scientist: Tzeu-yu Tu

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# Well Gauging/Sampling Report

Sheet 6 of 7

Date: 7-10-05 Project Name: Crescent Shell Project No: SP-165 Well Number: MW-7

Analyses Tested: TPHg, TPHd, TPHmo, BTXE, 5 Oxys.

Sample Containers: 3 HCl VOAs, 2 1-L Amber Glass Bottles

Purge Technique: ☐ Bailer ☒ Pump

Sounder Used: ☐ Water Meter ☒ Interface Meter

**Water & Free Product Levels**

| Time | Depth to Water | Depth to Product | Notes: |
|---|---|---|---|
| 12.00P | 8.3 ft | | No Sheen |
| 12.24P | 8.3 ft | | " |
| End | | | |
| | | | |
| | | | |
| | | | |

**Field Measurements**

| Time | Total Vol. Removed/(gal) | pH | Temp/(F) | Cond./(ms/cm) | DO/(mg/L) | DO/(%) | |
|---|---|---|---|---|---|---|---|
| 4.25P | 0 | 7.06 | 61.42 | 0.184 | 1.4 | 14.3 | |
| 4.27 | 1.6 | 7.23 | 60.96 | 0.192 | 1.55 | 15.7 | |
| 4.31 | 3.2 | 7.23 | 60.73 | 0.195 | 1.61 | 16.3 | |
| 4.35 | 4.8 | 7.16 | 60.92 | 0.2 | 1.56 | 15.9 | |
| | | | | | | | |
| | | | | | | | |

Field Scientist: Tian-yu Tsai

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# Well Gauging/Sampling Report

Sheet 7 of 7

Date: 7-10-05 Project Name: Crescent Shell Project No: 5J-165 Well Number: MW-8

Analyses Tested: TPHg, TPHd, TPHmo, BTXE, 5 Oxys

Sample Containers: 3 HCl VOA, 2 1L Amber Glass Bottles

Purge Technique: ☐ Bailer ☐ Pump

Sounder Used: ☐ Water Meter ☒ Interface Meter

**Water & Free Product Levels**

| Time | Depth to Water | Depth to Product | Notes: |
|---|---|---|---|
| 12.21 | 10.92 ft | | Sheen, |
| 12.55 | 10.92 | | " |
| End | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**Field Measurements**

| Time | Total Vol. Removed/(gal) | pH | Temp/(F) | Cond./(ms/cm) | DO/(mg/L) | DO/(%) | |
|---|---|---|---|---|---|---|---|
| 1.44p | 0 | 7.05 | 61.89 | 0.643 | 1.29 | 13.3 | |
| 1.50 | 1 | 7.02 | 61.07 | 0.531 | 0.91 | 9.3 | |
| 1.53 | 2 | 7.03 | 60.95 | 0.525 | 1.03 | 10.4 | |
| 1.56 | 3 | 7.01 | 60.97 | 0.530 | 0.89 | 9.0 | |
| | | | | | | | |
| | | | | | | | |

Field Scientist: Tien-ya Tai